

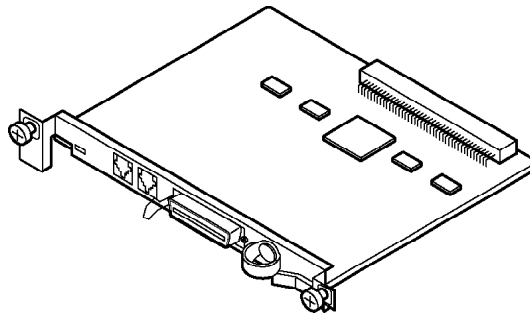
ORDER NO. KMS0308820C1

F19

Service Manual

16Port Single Line Telephone Extension Card

**KX-TDA0174
(for U.S.A.)**



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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

When you note the serial number, write down all of the 11 digits. The serial number may be found on the unit.

Panasonic

IMPORTANT INFORMATION ABOUT LEAD FREE, (PbF), SOLDERING

If lead free solder was used in the manufacture of this product the printed circuit boards will be marked PbF.

Standard leaded, (Pb), solder can be used as usual on boards without the PbF mark.

When this mark does appear please read and follow the special instructions described in this manual on the use of PbF and how it might be permissible to use Pb solder during service and repair work.

1. ABOUT LEAD FREE SOLDER (PbF: Pb free)

Note:

In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to

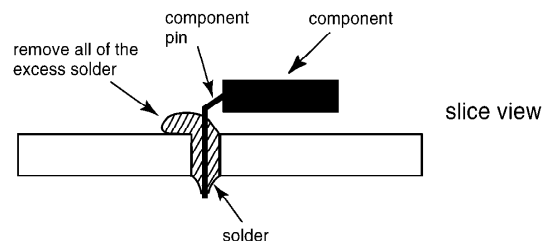
standard solder or solder that contains lead.

We will use PbF solder when discussing the lead free solder used in our manufacturing process which is made from Tin, (Sn), Silver, (Ag), and Copper, (Cu).

This model, and others like it, manufactured using lead free solder will have PbF stamped on the PCB. For service and repair work we suggest using the same type of solder although, with some precautions, standard Pb solder can also be used.

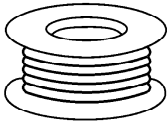
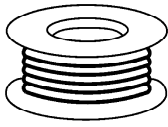
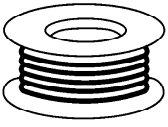
Caution

- PbF solder has a melting point that is 50° ~ 70° F, (30° ~ 40°C) higher than Pb solder. Please use a soldering iron with temperature control and adjust it to 700° ± 20° F, (370° ± 10°C). In case of using high temperature soldering iron, please be careful not to heat too long.
- PbF solder will tend to splash if it is heated much higher than its melting point, approximately 1100°F, (600°C).
- If you must use Pb solder on a PCB manufactured using PbF solder, remove as much of the original PbF solder as possible and be sure that any remaining is melted prior to applying the Pb solder.
- When applying PbF solder to double layered boards, please check the component side for excess which may flow onto the opposite side (See figure, below).



1.1. SUGGESTED PbF SOLDER

There are several types of PbF solder available commercially. While this product is manufactured using Tin, Silver, and Copper, (Sn+Ag+Cu), you can also use Tin and Copper, (Sn+Cu), or Tin, Zinc, and Bismuth, (Sn+Zn+Bi). Please check the manufacturer's specific instructions for the melting points of their products and any precautions for using their product with other materials. The following lead free (PbF) solder wire gauge are recommended for service of this product: 0.3mm, 0.6mm and 1.0mm.

0.3mm X 100g	0.6mm X 100g	1.0mm X 100g
		

1.2. HOW TO RECOGNIZE THAT Pb FREE SOLDER IS USED

“PbF” is marked on the PCB to show that Pb free solder is used.(See the figure below.)

1. Cover the plastic parts boxes with aluminum foil.
2. Ground the soldering irons.
3. Use a conductive mat on the worktable.
4. Do not touch IC or LSI pins with bare fingers.

3. GENERAL DESCRIPTION

KX-TDA0174 (SLC16) is mounted into a free slot of TDA100/200 system. Up to 16 SLT can be randomly connected by using SLC16 card. It does not have LPR onboard, and it is controlled completely by MPR.

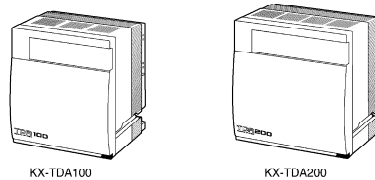
4. SPECIFICATION

Functional Block	Functional contents	
Extension Interface	Number of Ports	8 ports
	SLT Interface	+30V 30mA Feeding function Dial-pulse signal detecting function DTMF signal detecting function Bell signal issuing function Hook detecting function Ringtrip detecting function 2W/4W converting function Surge protective function Infineon-manufactured 4ch codec function CODEC function μ / A law switching function Test function (Loop back, Tone generation) Programmable digital filtering function Serial interface function PIO function
DTMF Receiver	16 lines for each port	
Extension Caller ID	Only connector terminal is installed	
On-board Ringer	20/25Hz 75Vrms Phase control (Three-phase / Four-phase)	
On-board DC/DC Power Supply	Input +15V Output +15V, +5V, +3.3V Input +40V Output for Bell ringing relay: +160V, -100V	
Power Failure Forwarding Function	4 lines supported	

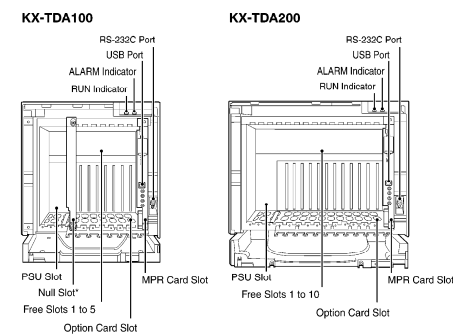
Functional Block	Functional contents	
Self-Diagnostic Function	Carried out with outside-line interface in a pair (only one port) Speech path test, Dial pulse test, DTMF test	
ASIC	EC bus interface function CT bus interface function Local bus interface function Time switch function, Gain controlling function Intelligent PIO function	
LED Display Circuit	Card status indicating LED: Two colors (Red/Green)	
External Interface Connector	Extension interface	50pin Amphenol connector: 1
	Power failure forwarding	4pin modular jack: 2

5. NAMES AND LOCATIONS

Overview



Inside View



Note:

*Null slot is not available for any optional service cards.

5.1. INSTALLING/REMOVING THE OPTIONAL SERVICE CARDS

Slot Condition

Card Type	Slot Type		
	KX-TDA100: Free Slots 1 to 5 KX-TDA200: Free Slots 1 to 10	Option Slot	MPR Slot
MPR Card	No	No	Yes
CO Line Cards	Yes	No	No
Extension Cards	Yes	No	No
OPB3 Card	Yes	Yes	No
CTI-LINK Card	Yes	Yes	No

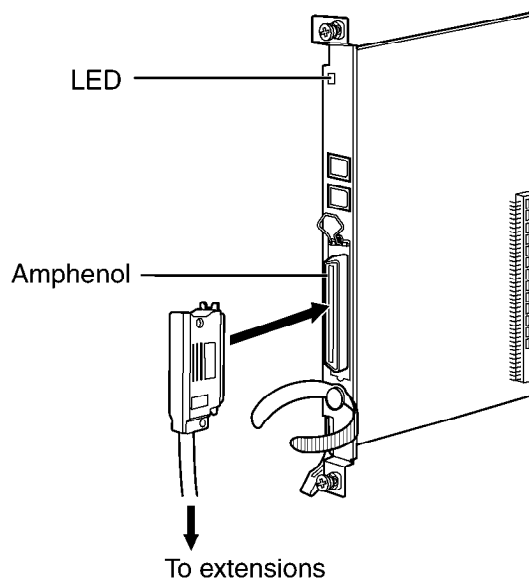
Caution:

To protect the back board from static electricity, do not touch parts on the back board in the main unit and on the optional service cards. To discharge static, touch ground or wear an earthing strap.

SLC16 Card

Function

16-port extension card for SLT with 4 power failure transfer ports.



Notes

- To connect the amphenol connector, refer to "Fastening Amphenol Type Connector".
- For details about power failure transfer, refer to "Auxiliary Connection for Power Failure Transfer".

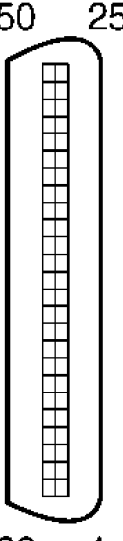
Accessory and User-supplied Items

Accessory: screws x 2

User-supplied: amphenol connector

Pin Assignments

Amphenol Connector

	No.	Signal Name	Function	No.	Signal Name	Function
	1	RA	Ring port 1	26	TA	Tip port 1
	2	RB	Ring port 2	27	TB	Tip port 2
	3	RC	Ring port 3	28	TC	Tip port 3
	4	RD	Ring port 4	29	TD	Tip port 4
	5	RE	Ring port 5	30	TE	Tip port 5
	6	RF	Ring port 6	31	TF	Tip port 6
	7	RG	Ring port 7	32	TG	Tip port 7
	8	RH	Ring port 8	33	TH	Tip port 8
	9	RI	Ring port 9	34	TI	Tip port 9
	10	RJ	Ring port 10	35	TJ	Tip port 10
	11	RK	Ring port 11	36	TK	Tip port 11
	12	RL	Ring port 12	37	TL	Tip port 12
	13	RM	Ring port 13	38	TM	Tip port 13
	14	RN	Ring port 14	39	TN	Tip port 14
	15	RO	Ring port 15	40	TO	Tip port 15
	16	RP	Ring port 16	41	TP	Tip port 16
	17-25	Reserved	-	42-50	Reserved	-

LED Indications

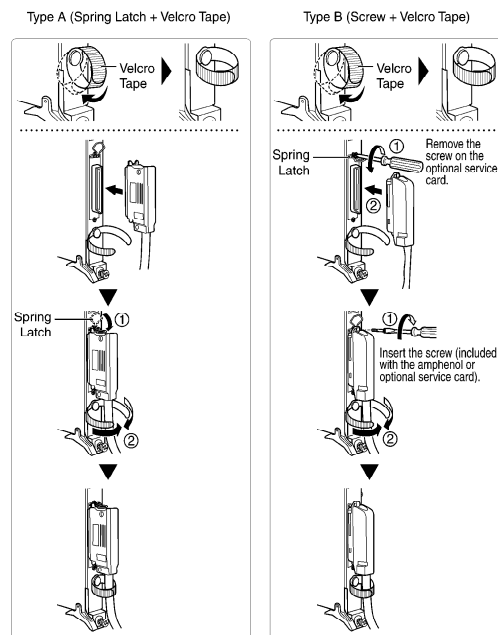
Indication	Color	Description
CARD STATUS	Green/Red	<p>OFF: Power Off</p> <p>Green ON: Normal (all ports are idle)</p> <p>Green Flash (60 times per minute): Normal (a port is in use)</p> <p>Red ON: Fault (includes reset)</p> <p>Red Flash (60 times per minute): Out of Service</p>

Fastening Amphenol Type Connector

An amphenol 57JE type connector is used on some of the optional service cards.

To connect an amphenol connector, use the spring latch or screw to fix the upper part and use

Velcro[®] tape to fix the lower part of the connector.



Auxiliary Connection for Power Failure Transfer

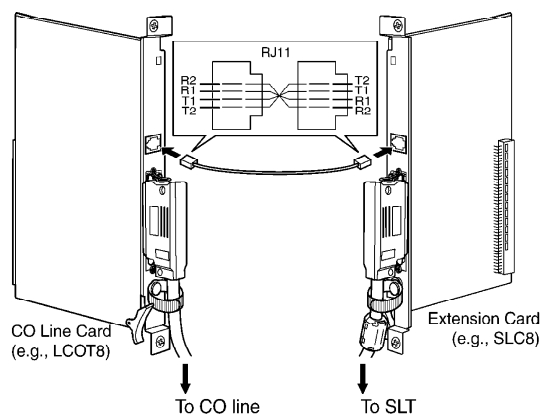
Auxiliary Connection for Power Failure Transfer

When the power supply to the Hybrid IP-PBX fails, power failure transfer (PFT) switches the current connection to the Auxiliary Connection automatically. A specific SLT (determined by System Programming) will be connected to selected CO lines in the event of system power failure. Auxiliary Connection is required to implement this feature.

Connection

The following CO line and extension cards can be used for Auxiliary Connections:

- Analog CO line cards: LCOT16 (4 PFT ports), and LCOT8 (2 PFT port)
- Extension cards: MSLC16 (4 PFT ports), SLC16 (4PFT ports), DHL8C (2 PFT port) and SLC8 (2 PFT port)



Note

Pin assignments for ports 3 and 4 are the same as those of ports 1 and 2.

Accessory and User-supplied Items

Accessory: none

User-supplied: RJ11 connectors

RJ11 Connector Pin Assignments for CO line Card

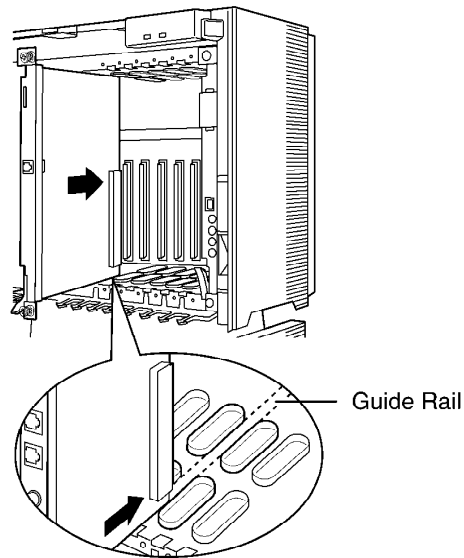
No.	Signal Name	Function
1	R2	Ring port 2
2	R1	Ring port 1
3	T1	Tip port 1
4	T2	Tip port 2

RJ11 Connector Pin Assignments for Extension Card

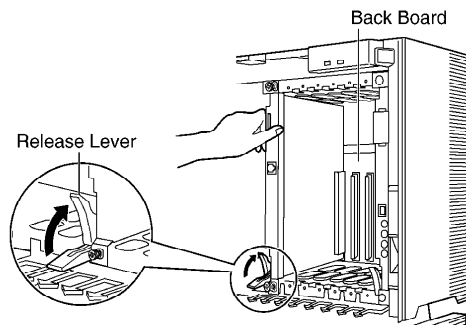
No.	Signal Name	Function
1	T2	Tip port 2
2	T1	Tip port 1
3	R1	Ring port 1
4	R2	Ring port 2

Installing Optional Service Cards

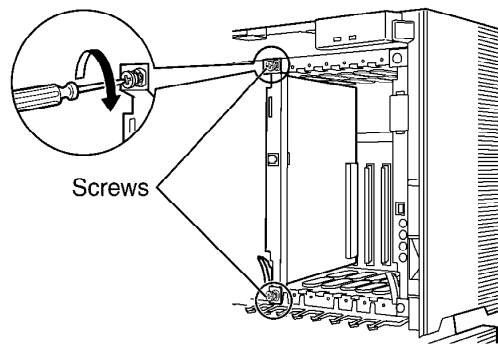
1. Insert the card along the guide rails.



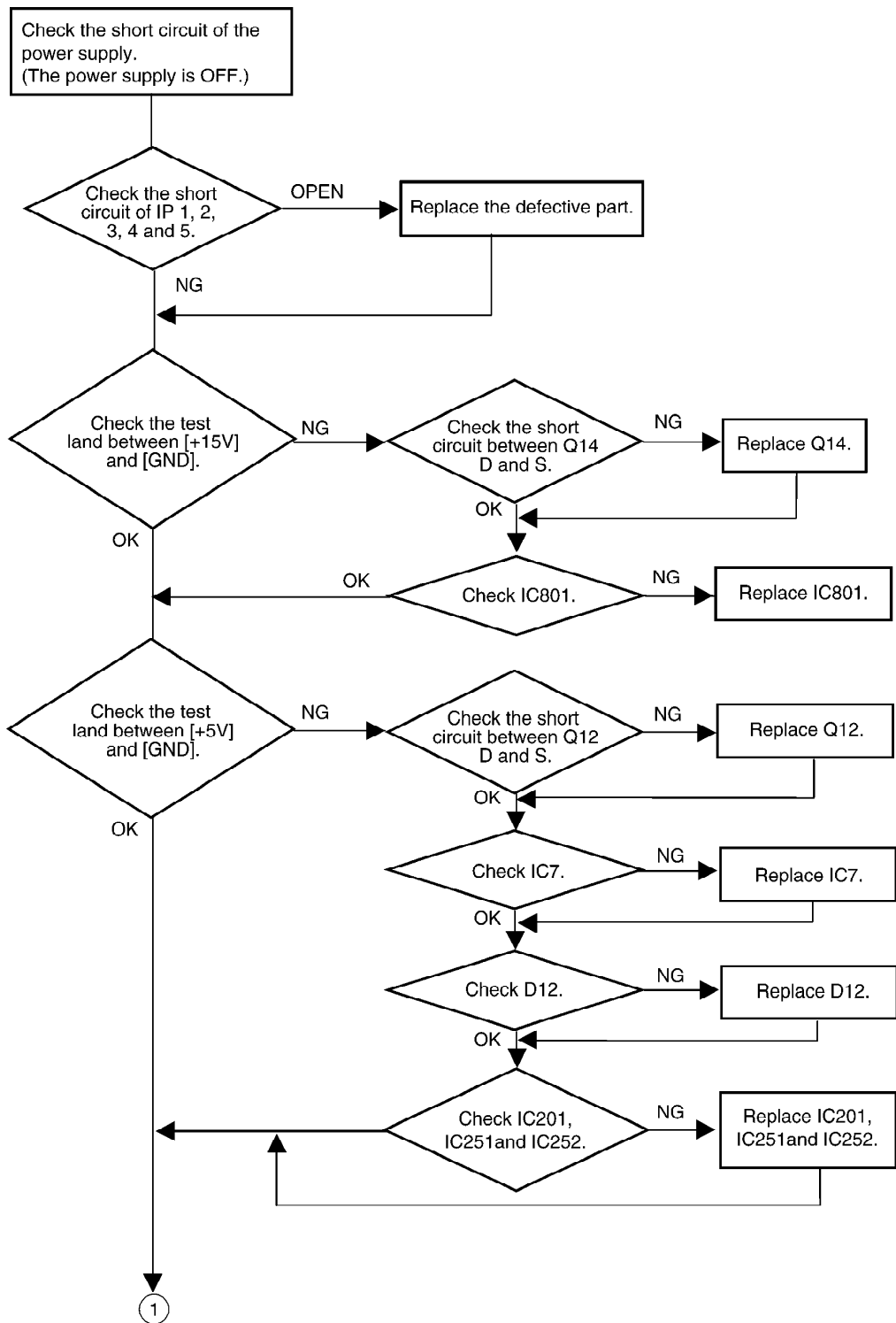
2. Holding the card as follows, push the release lever in the direction of the arrow so that the card is made to engage with the connector on the back board securely.

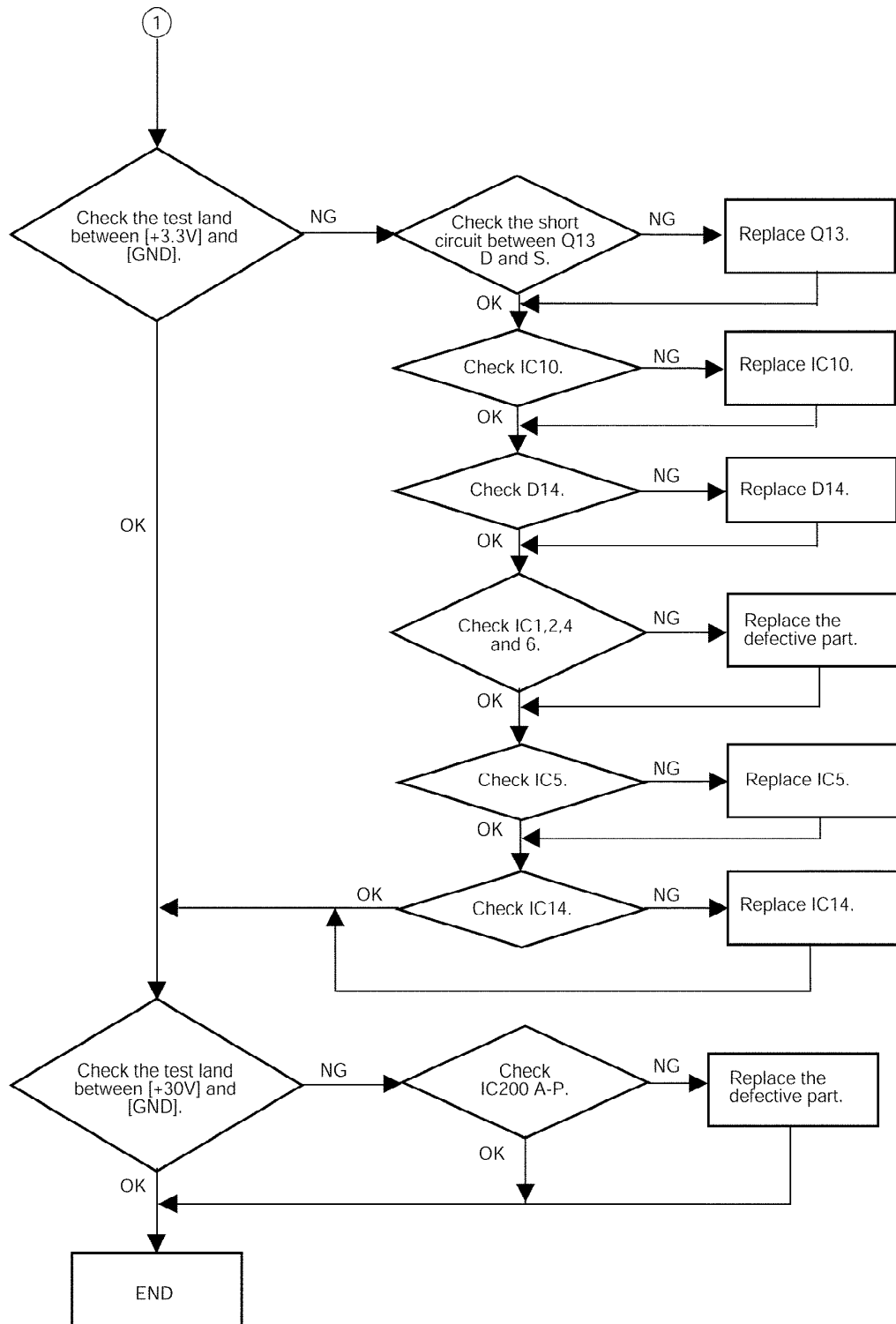


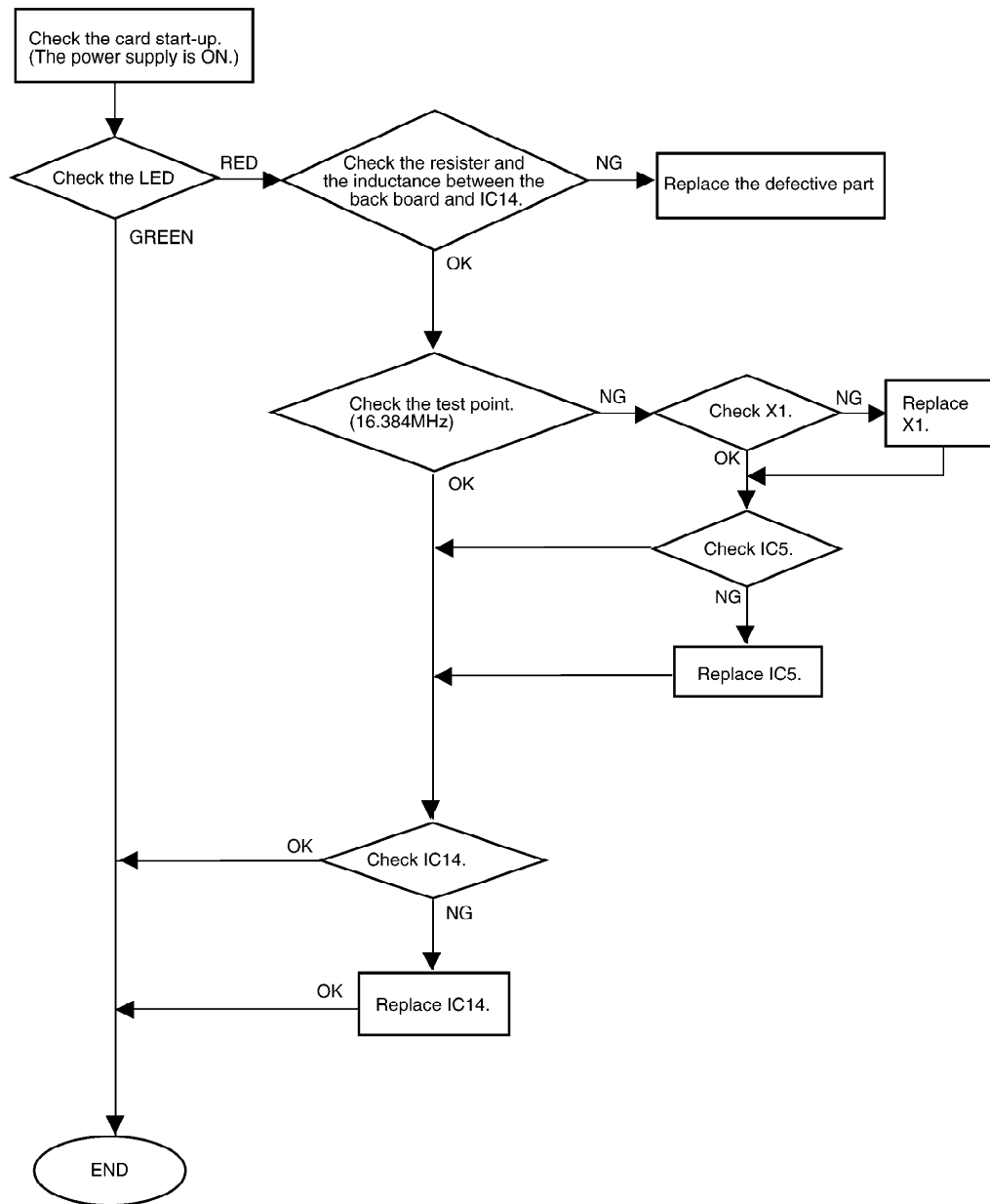
3. Turn the 2 screws clockwise to fix the card.

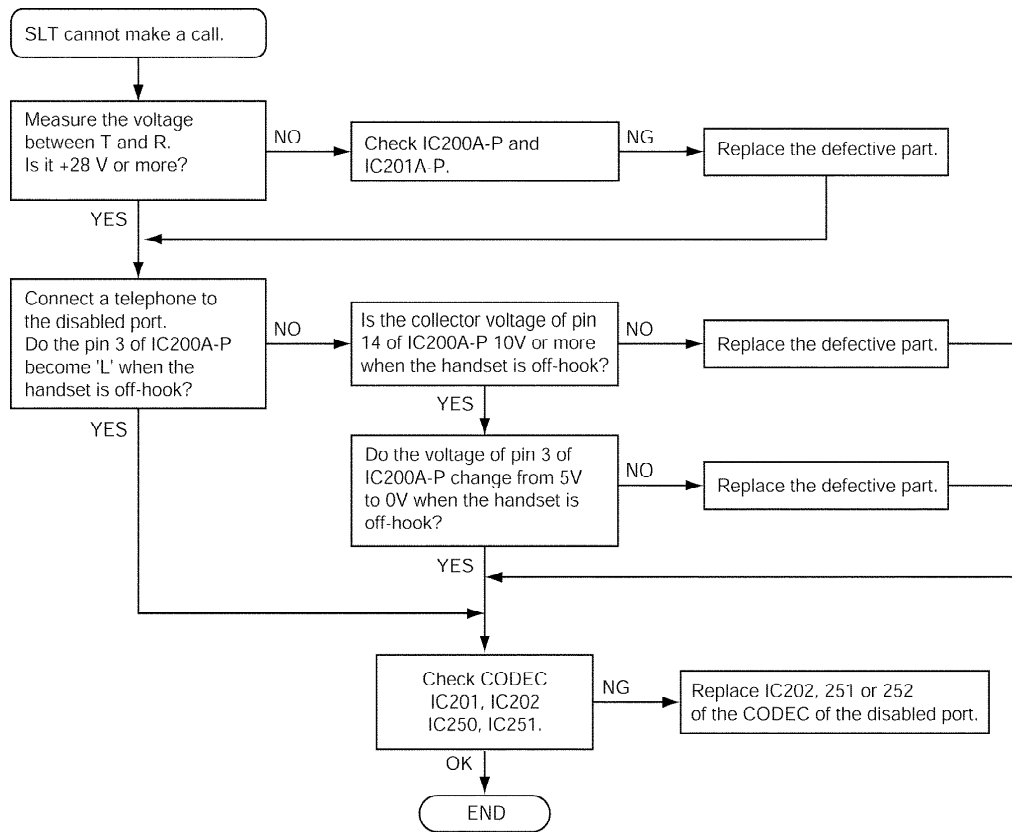


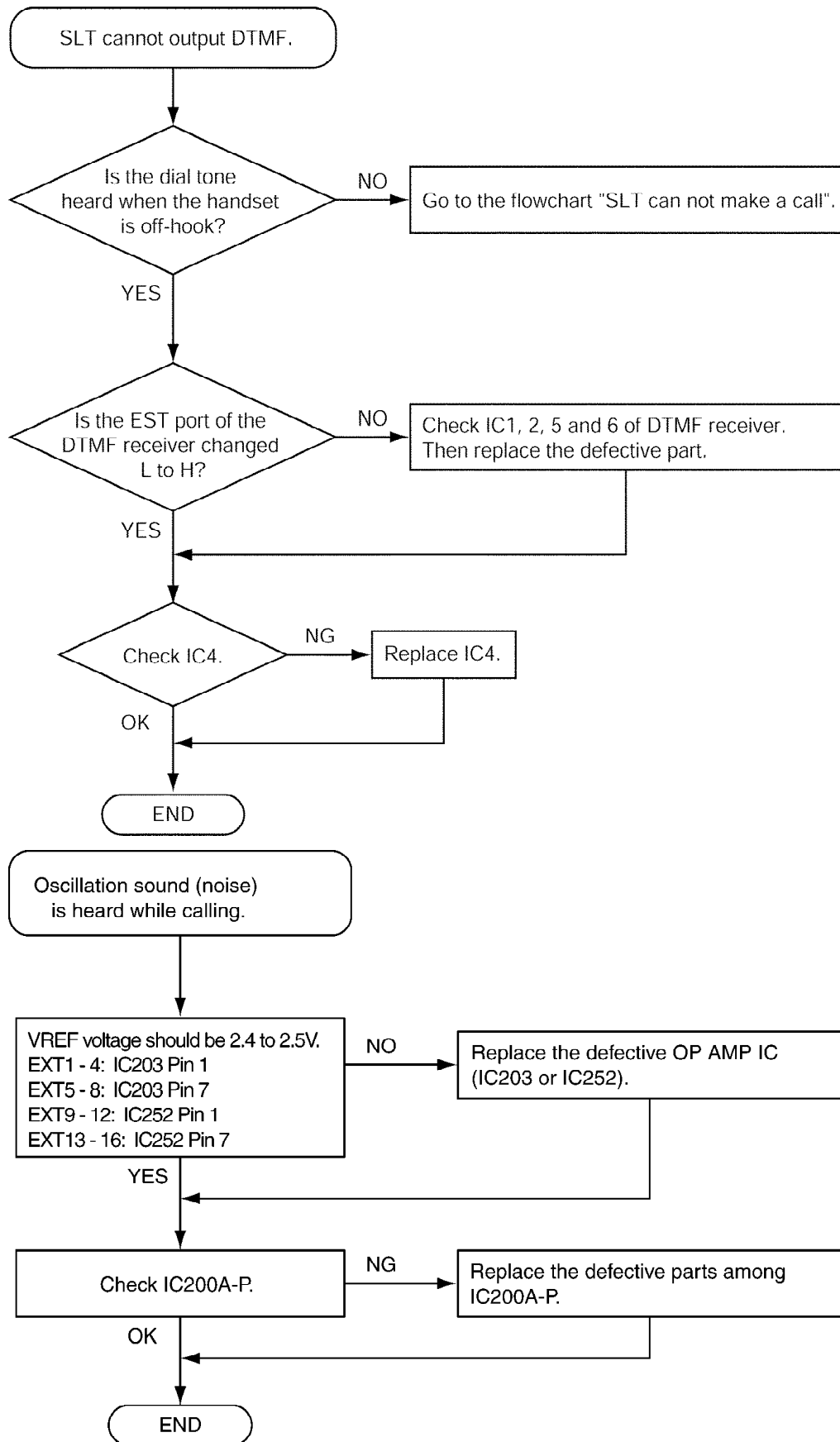
6. TROUBLESHOOTING GUIDE







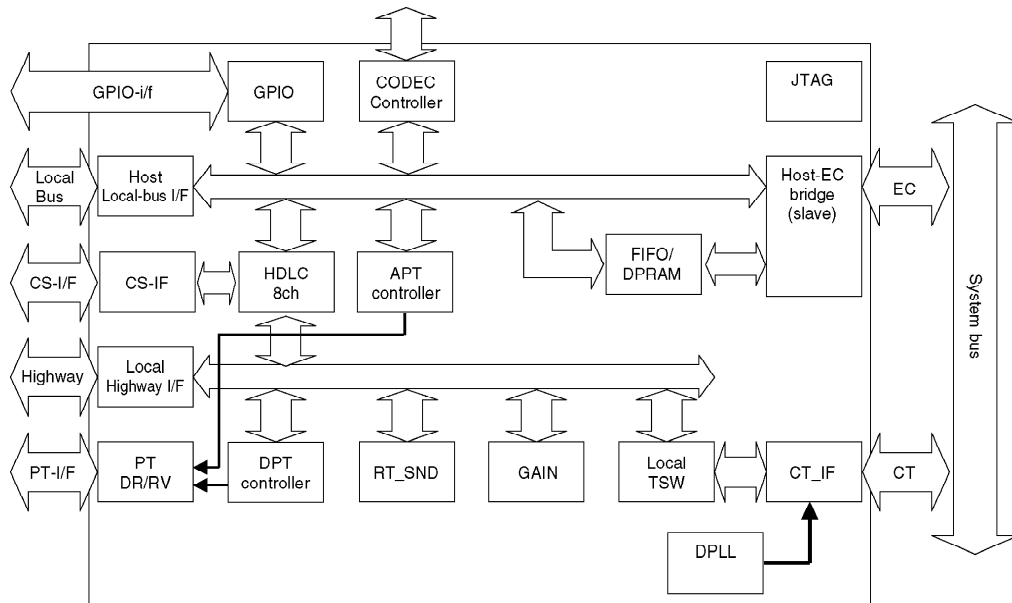




7. BLOCK DIAGRAM

8. CIRCUIT OPERATION

8.1. IC14(ASIC)



- EC bus interface

Independent bus for 16bit/8MHz two-way address data multiplex.

- CT bus interface

Supports eight 8.192MHz highways (128 time slots).

- Local TSW

Exchanges the time slots between CT bus (1024ch) and local highway (64ch).

- Local highway Interface

Holds 2.048, 4.096, 8.192MHz highway (Up to 64 time slots) (VOX bus onboard) A stream 0 through 15 (1 stream = 128 time slots) of PCM data can be switched to a local highway (64time slots). See the figure blow for the examples of the local highway time slot configurations (You can assign desired slots.).

Slot	PCM data
0-15	Not used
16	SLT#0
17	SLT#1
18	SLT#2
19	SLT#3
20	SLT#4
21	SLT#5
22	SLT#6
23	SLT#7
25-31	Not used

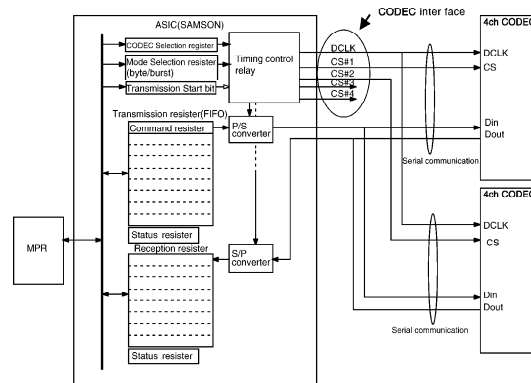
Slot	PCM data
32-47	Not used
48	SLT#8
49	SLT#9
50	SLT#10
51	SLT#11
52	SLT#12
53	SLT#13
54	SLT#14
55	SLT#15
56-63	Not used

- **Local gain control**

Controls the gain of the local highway up-and-down 64ch in 1db step arbitrarily.

- **CODEC interface**

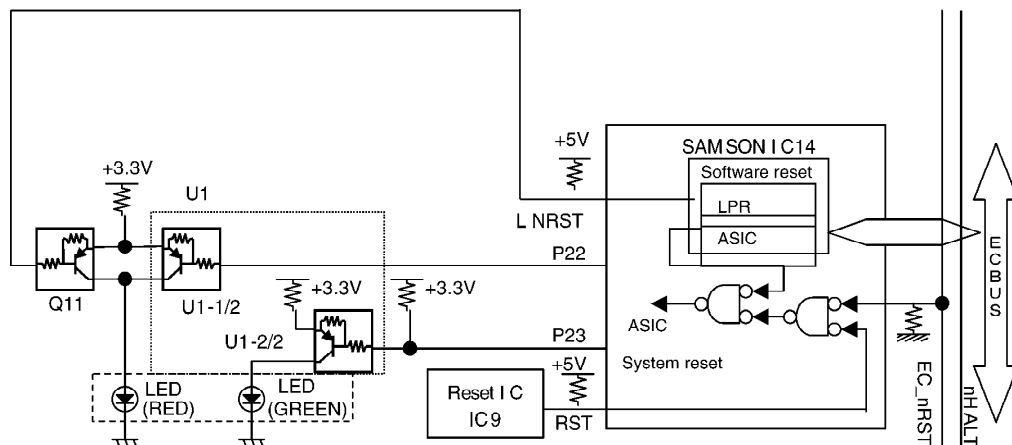
Can connect up to four Infineon-manufactured PEB2466, and is intended for enabling the line control.



- **GPIO interface**

Parallel interface that is arbitrarily and bidirectionally programmable .

8.2. RESET CIRCUIT



When starting the system, the ASIC reset cancel will be executed by MPR through EC_nRST.

- **LED status indicator LED (2 colors)**

Red ON: Fault (Including RESET)

Green ON: INS (Line not in use)

Green Flash (60/m): INS (Line in use)

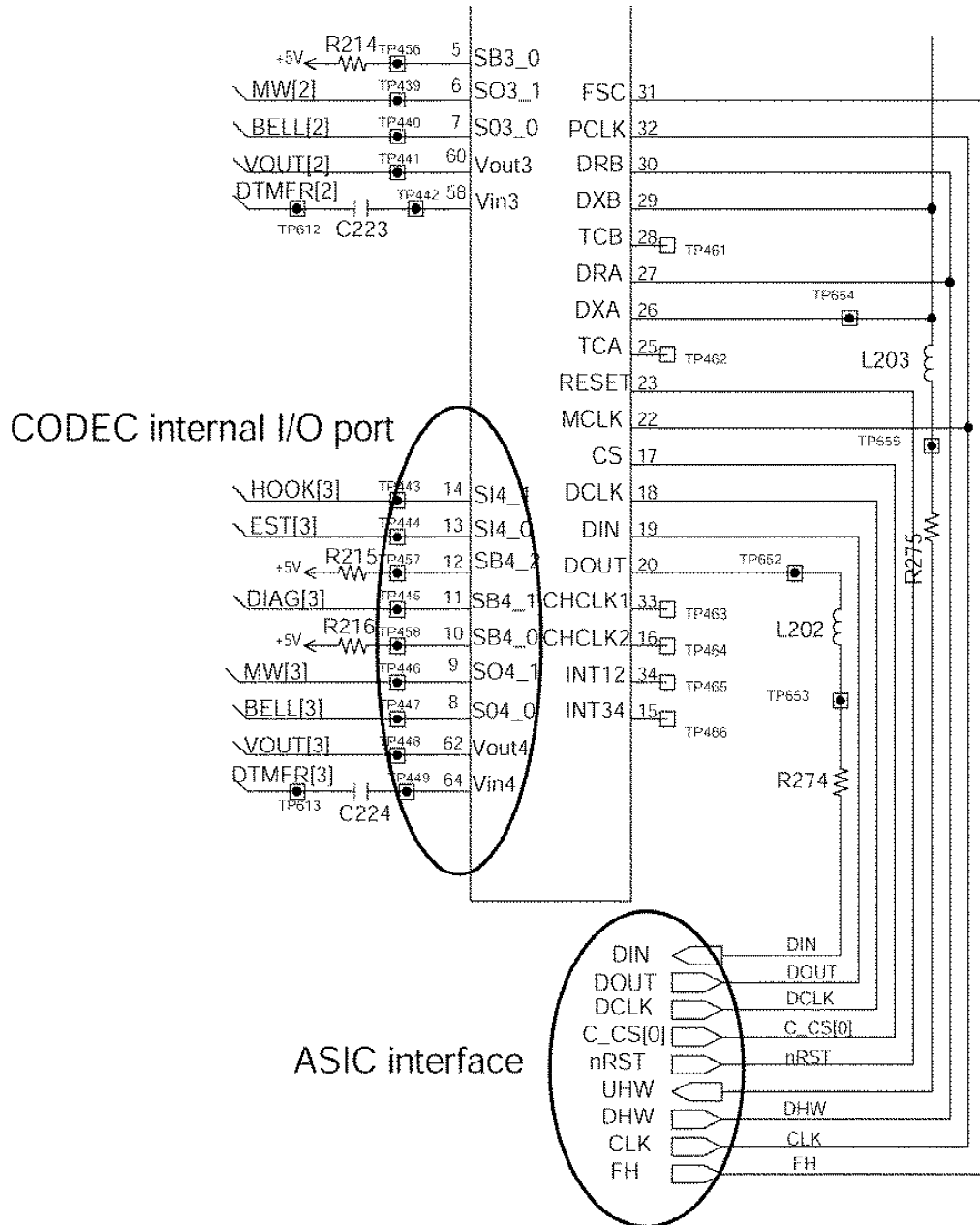
Red Flash: OUS

OFF: Power supply malfunction

8.3. CODEC FUNCTION(IC201,202,250,251)

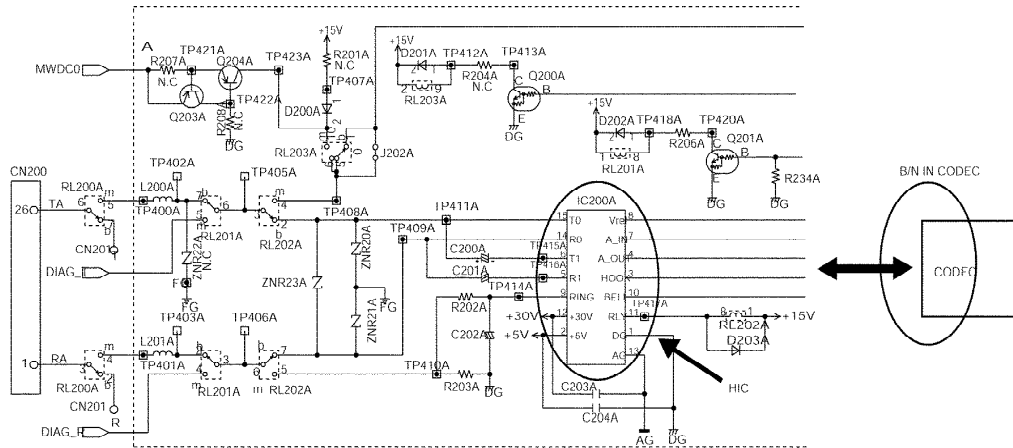
Infineon PEB2466 CODEC is installed. The analogue features such as BN, frequency

characteristic, volume level, sidetone are configured by ASIC CODEC interface DCLK, CS, DOUT, DIN. In addition, the CODEC has an internal I/O port that supports Hook detection, DTMF detection, BELL relay control and DIAG relay control. Also, it converts A/D to D/A, and 4-line-analogue signal to PCM code (É/A) in G.711 format.



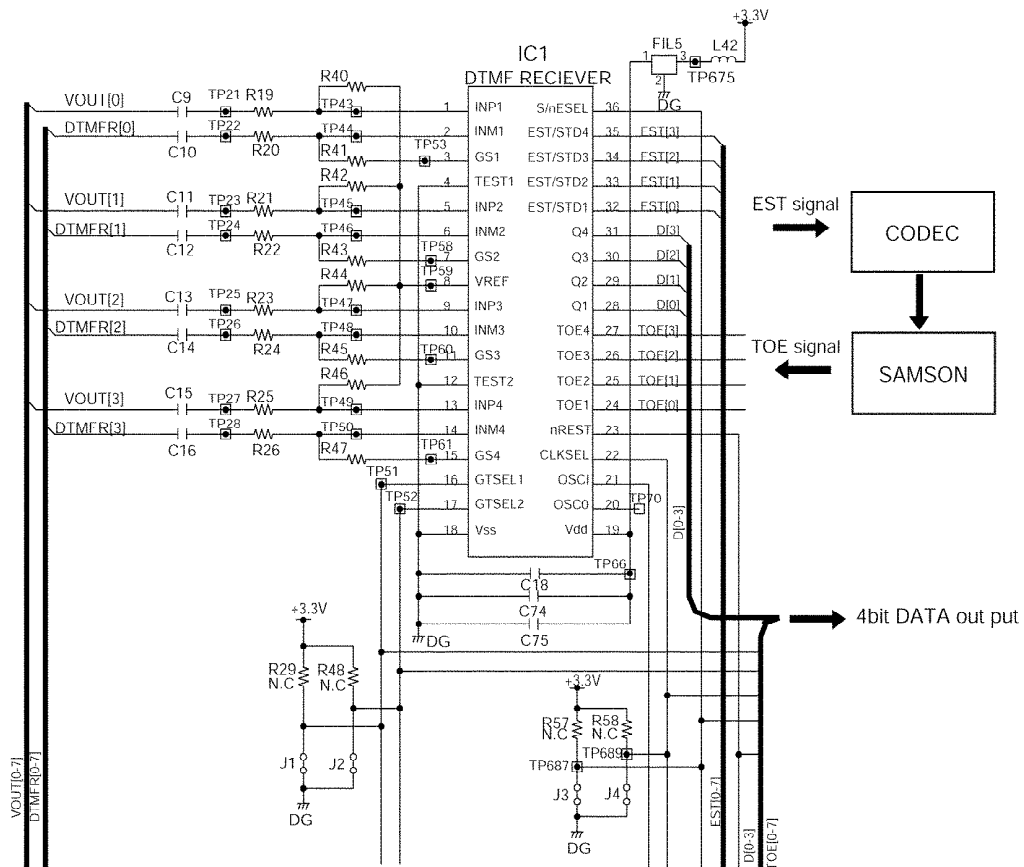
8.4. 2W-4W CONVERSION

It converts 4W-VOX signal used in the PBX to 2W-VOX signal used in SLT, and vice versa. It consists of an operational amplifier in the HIC and a balanced network in the CODEC. It can control the return loss of the audio data and frequency characteristics. By modifying the CODEC program, it can match the corresponding impedance.



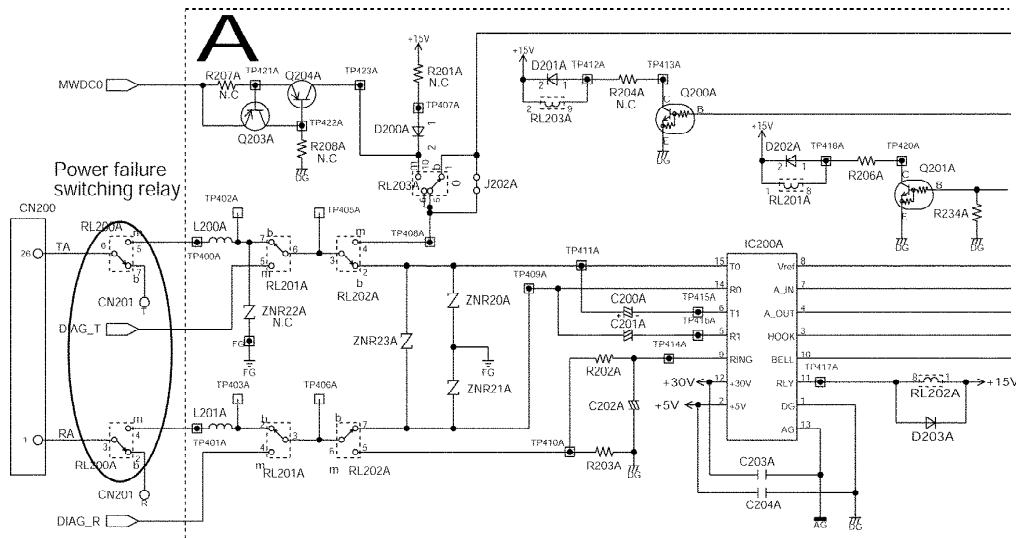
8.5. DTMF SIGNAL DETECTION

Each port has its own 4ch-DTMF receiver. The receiver detects the signal using IC1 for port A through D, IC2 for port E through H, IC4 for port I through L and IC6 for port M through P. The CODEC detects the DTMF data to be effective at EST terminal=H. This information is detected in the MPR via SAMSON, then DTMF signal is detected by MPR reading the DTMF receiver data that came through the SAMSON local bus.



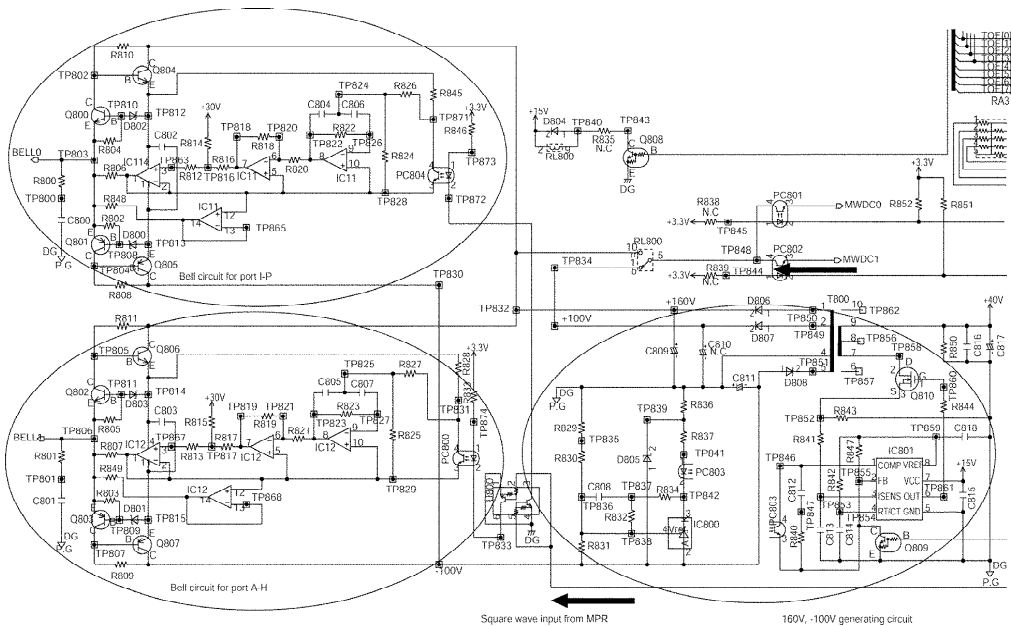
8.6. POWER SUPPLY

A constant-current power supply in HIC provides +30V, ring side 0V grounding to SLC. The maximum feeding current is 30mA.



8.13. BELL SIGNAL GENERATOR

Bell signal for ringing an SLT is generated by amplifying the 20 or 25Hz square wave provided from MPR card to AC75Vrms onboard. The SW power supply in the BELL circuit generates between +160V and 100V of voltage by switching the +40V from the power source at 125KHz frequencies. Bell signal picks up the square wave provided from MPR via a photocoupler, and it transforms into SIN wave, then amplified to AC75Vrm bell signal by the amplitude between +160V and -100V of voltage (Mainly +30Vdc) produced by SW power supply. When the Bell signal is not needed, bell signal voltage generating circuit can be turned off by transmitting H signal from P21 port (BELL CNT) of ASIC to reduce the power consumption.



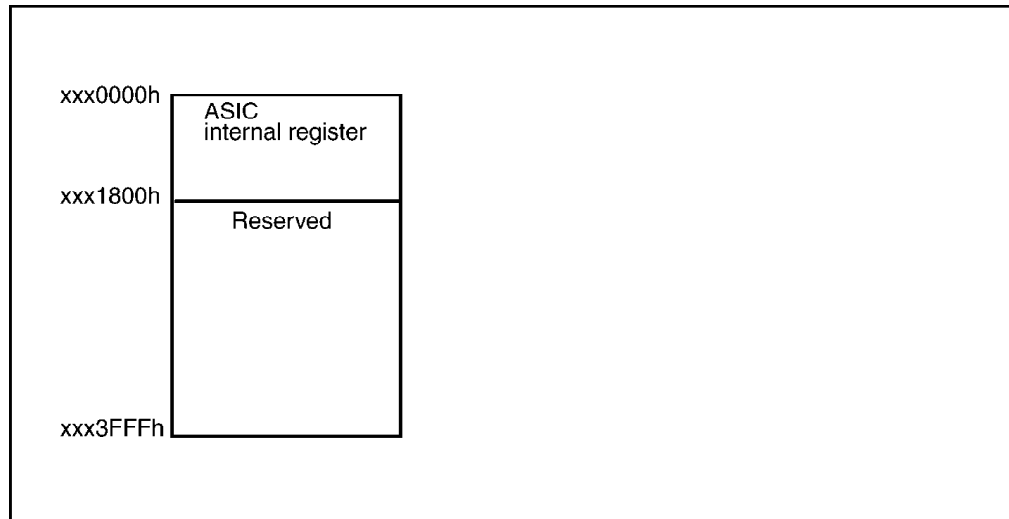
8.14. BELL SIGNAL TRANSMISSION

A 75V bell signal generated onboard is transmitted to the individual port, then control the bell ON/OFF by making a bell relay in each port (Bell signal ON) and by breaking it (Bell signal OFF). The 16 ports do not ring simultaneously. They are divided into 4 layers to control ON/OFF. They are divided in to following 4 groups (The ports in the same group ring simultaneously.): "1, 5, 9, 13", "2, 6, 10, 14", "3, 7, 11, 15" and "4, 8, 12, 16".

switching power supply of IC7, Q12 and L7. As protective circuits, IP4 that protects from +3.3V short circuit, IP5 that protects from +5V short circuit, and an overvoltage protection that breaks IP1 by turning on FET in Q14 when a rise in voltage of +3.3V/+5V is detected.

8.16. SOFTWARE INTERFACE SPECIFICATIONS

- SLC16 ADDRESS MAP



9. IC DATA

9.1. IC14(ASIC)

CODEC	EXTENTION PORT	PIN No.	SIGNAL NAME	I/O	ACT	DESCRIPTIONS	NOTE
CODECIC201	EXT0	SO1_1		O			L (Fixed)
		SO1_0	BELL0	O	H	Ringer output	
		SB1_2		O			+5V pull up
		SB1_1	DIAG_RLY0	O	H	Self diagnosis switching	
		SB1_0		O			+5V pull up
		SI1_1	HOOK0	I	L	Off-hook detection	
		SI1_0	DT_EST0	I	H	DTMF detection	
	EXT1	SO2_1		O			L(Fixed)
		SO2_0	BELL1	O	H	Ringer output	
		SB2_2		O			+5V pull up
		SB2_1		O	H		
		SB2_0		O			+5Vu pull up
		SI2_1	HOOK1	I	L	Off-hook detection	
		SI2_0	DT_EST1	I	H	DTMF detection	
	EXT2	SO3_1		O			L (Fixed)
		SO3_0	BELL2	O	H	Ringer output	
		SB3_2		O			+5V pull up
		SB3_1		O	H		
		SB3_0		O			+5V pull up
		SI3_1	HOOK2	I	L	Off-hook detection	
		SI3_0	DT_EST2	I	H	DTMF detection	
	EXT3	SO4_1		O			L (Fixed)
		SO4_0	BELL3	O	H	Ringer output	
		SB4_2		O			+5V pull up
		SB4_1		O	H		
		SB4_0		O			+5V pull up
		SI4_1	HOOK3	I	L	Off-hook detection	
		SI4_0	DT_EST3	I	H	DTMF detection	

CODEC	EXTENTION PORT	PIN No.	SIGNAL NAME	I/O	ACT	DESCRIPTIONS	NOTE
CODECIC202	EXT4	SO1_1		O			L (Fixed)
		SO1_0	BELL4	O	H	Ringer output	
		SB1_2		O			+5V pull up
		SB1_1		O	H		
		SB1_0		O			+5V pull up
		SI1_1	HOOK4	I	L	Off-hook detection	
		SI1_0	DT_EST4	I	H	DTMF detection	
	EXT5	SO2_1		O			L (Fixed)
		SO2_0	BELL5	O	H	Ringer output	
		SB2_2		O			+5V pull up
		SB2_1		O	H		
		SB2_0		O			+5V pull up
		SI2_1	HOOK5	I	L	Off-hook detection	
		SI2_0	DT_EST5	I	H	DTMF detection	
	EXT6	SO3_1		O			L (Fixed)
		SO3_0	BELL6	O	H	Ringer output	
		SB3_2		O			+5V pull up
		SB3_1		O	H		
		SB3_0		O			+5V pull up
		SI3_1	HOOK6	I	L	Off-hook detection	
		SI3_0	DT_EST6	I	H	DTMF detection	
	EXT7	SO4_1		O			L (Fixed)
		SO4_0	BELL7	O	H	Ringer output	
		SB4_2		O			+5V pull up
		SB4_1		O	H		
		SB4_0		O			+5V pull up
		SI4_1	HOOK7	I	L	Off-hook detection	
		SI4_0	DT_EST7	I	H	DTMF detection	

CODEC	EXTENTION PORT	PIN No.	SIGNAL NAME	I/O	ACT	DESCRIPTIONS	NOTE
CODECIC250	EXT8	SO1_1		O			L (Fixed)
		SO1_0	BELL8	O	H	Ringer output	
		SB1_2		O			+5V pull up
		SB1_1		O	H		
		SB1_0		O			+5V pull up
		SI1_1	HOOK8	I	L	Off-hook detection	
		SI1_0	DT_EST8	I	H	DTMF detection	
	EXT9	SO2_1		O			L (Fixed)
		SO2_0	BELL9	O	H	Ringer output	
		SB2_2		O			+5V pull up
		SB2_1		I	H		
		SB2_0		O			+5V pull up
		SI2_1	HOOK9	I	L	Off-hook detection	
		SI2_0	DT_EST9	I	H	DTMF detection	
	EXT10	SO3_1		O			L (Fixed)
		SO3_0	BELL10	O	H	Ringer output	
		SB3_2		O			+5V pull up
		SB3_1		O	H		
		SB3_0		O			+5V pull up
		SI3_1	HOOK10	I	L	Off-hook detection	
		SI3_0	DT_EST10	I	H	DTMF detection	
	EXT11	SO4_1		O			L (Fixed)
		SO4_0	BELL11	O	H	Ringer output	
		SB4_2		O			+5V pull up
		SB4_1		O	H		
		SB4_0		O			+5V pull up
		SI4_1	HOOK11	I	L	Off-hook detection	
		SI4_0	DT_EST11	I	H	DTMF detection	

CODEC	EXTENTION PORT	PIN No.	SIGNAL NAME	I/O	ACT	DESCRIPTIONS	NOTE
CODECIC251	EXT12	SO1_1		O			L (Fixed)
		SO1_0	BELL12	O	H	Ringer output	
		SB1_2		O			+5V pull up
		SB1_1		O	H		
		SB1_0		O			+5V pull up
		SI1_1	HOOK12	I	L	Off-hook detection	
		SI1_0	DT_EST12	I	H	DTMF detection	
	EXT13	SO2_1		O			L (Fixed)
		SO2_0	BELL13	O	H	Ringer output	
		SB2_2		O			+5V pull up
		SB2_1		O	H		
		SB2_0		O			+5V pull up
		SI2_1	HOOK13	I	L	Off-hook detection	
		SI2_0	DT_EST13	I	H	DTMF detection	
	EXT14	SO3_1		O			L (Fixed)
		SO3_0	BELL14	O	H	Ringer output	
		SB3_2		O			+5V pull up
		SB3_1		O	H		
		SB3_0		O			+5V pull up
		SI3_1	HOOK14	I	L	Off-hook detection	
		SI3_0	DT_EST14	I	H	DTMF detection	
	EXT15	SO4_1		O			L (Fixed)
		SO4_0	BELL15	O	H	Ringer output	
		SB4_2		O			+5V pull up
		SB4_1		O	H		
		SB4_0		O			+5V pull up
		SI4_1	HOOK15	I	L	Off-hook detection	
		SI4_0	DT_EST15	I	H	DTMF detection	

10. HOW TO REPLACE A FLAT PACKAGE IC

10.1. PREPARATION

- PbF (: Pb free) Solder

- Soldering Iron

Tip Temperature of 700°F ± 20°F (370°C ± 10°C)

Note: We recommend a 30 to 40 Watt soldering iron. An expert may be able to use a 60 to 80 Watt iron where someone with less experience could overheat and damage the PCB foil.

- Flux

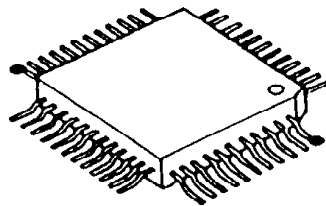
Recommended Flux: Specific Gravity → 0.82.

Type → RMA (lower residue, non-cleaning type)

Note: See [ABOUT LEAD FREE SOLDER \(PbF: Pb free\)](#) ().

10.2. PROCEDURE

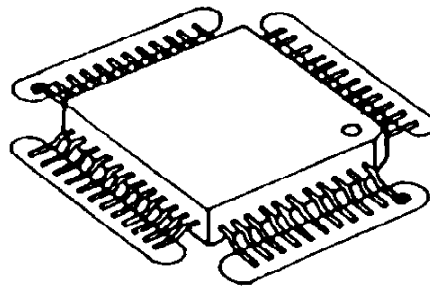
1. Tack the flat pack IC to the PCB by temporarily soldering two diagonally opposite pins in the correct positions on the PCB.



● - - - - - Temporary soldering point.

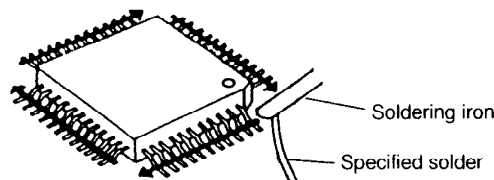
Be certain each pin is located over the correct pad on the PCB.

2. Apply flux to all of the pins on the IC.



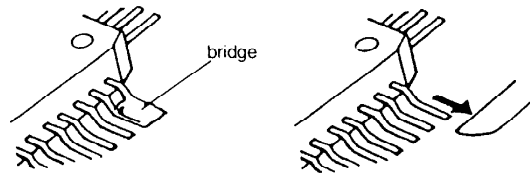
○ - - - - - Flux

3. Being careful to not unsolder the tack points, slide the soldering iron along the tips of the pins while feeding enough solder to the tip so that it flows under the pins as they are heated.


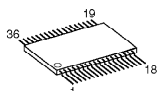
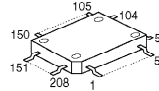

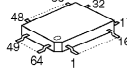
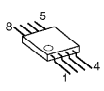




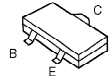



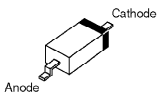
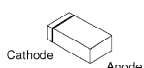
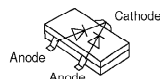
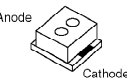


10.3. REMOVING SOLDER FROM BETWEEN PINS

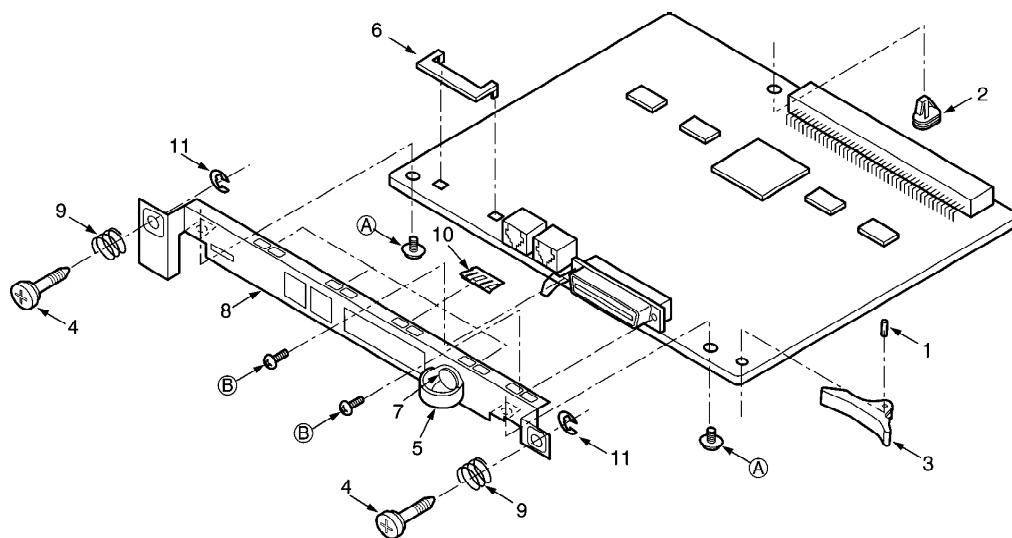
1. Add a small amount of solder to the bridged pins.
2. With a hot iron, use a sweeping motion along the flat part of the pin to draw the solder from between the adjacent pads.





11. TERMINAL GUIDE OF ICS, TRANSISTORS AND DIODES

 <p>C0JBAB000504 C0ABCB000050</p>	 <p>C1CB00001314</p>	 <p>C1CB00001430</p>	 <p>PSVIPST596CN PQVIS8520F33 C0DBAHA00011</p>	 <p>C1CB00001432</p>
 <p>PQVINJM4558M</p>	 <p>C0DBZZB00005</p>	 <p>C0DBAJD00002</p>	 <p>EHDHA1846A</p>	 <p>B1DHCD000018 B1DFDC000002 B1DFBL000002</p>
 <p>2SD1819A 2SB1218A PQVTDTC143E PQVTDTA114EU</p>	 <p>B1BBAP000002 B1BDAP000010</p>	 <p>B1GHCFJJ0007</p>	 <p>B1GFAFNN0001</p>	 <p>PFVDDGD1FP3T B0HCMR000002</p>
 <p>MA110 MA8051, MA8150 MA8075, MA8240</p>	 <p>MA142WKTIX</p>	 <p>PQVDBRPY1204</p>		

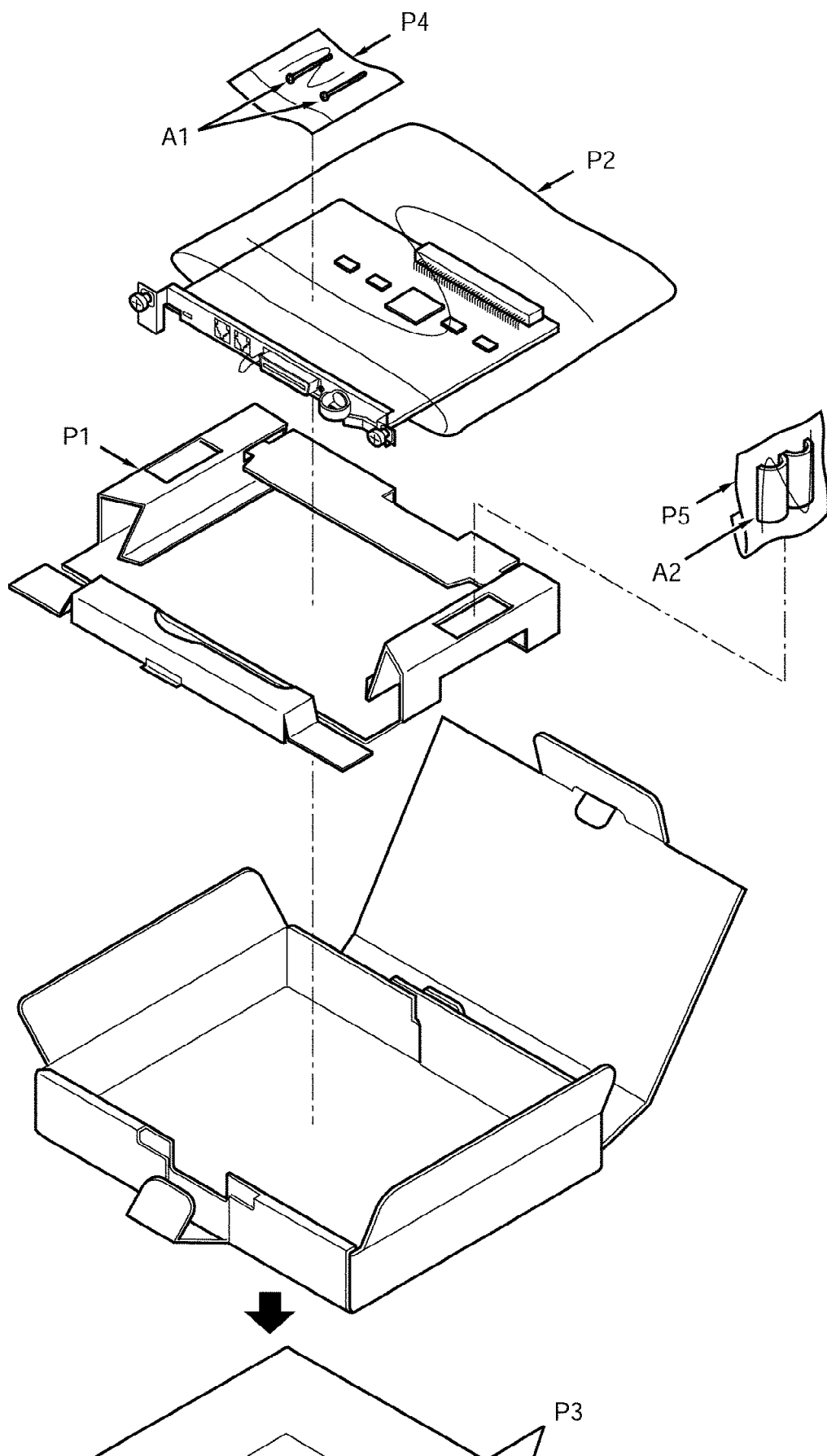
12. CABINET AND ELECTRICAL PARTS LOCATION

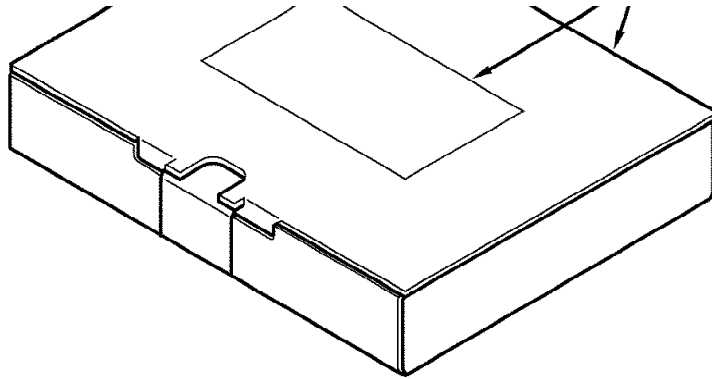


SCREW

Ref. No.	Part No.	Screw
A	XYN3+F6	 Φ 3 x 6 mm
B	XSN4X40+6FN	 Φ 2.8 x 6 mm

13. ACCESSORIES AND PACKING MATERIALS





14. REPLACEMENT PARTS LIST

1. RTL (Retention Time Limited)

Note: The marking (RTL) indicates that the Retention Time is limited for this item.

After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is depends on the type of assembly, and in accordance with the laws governing parts and product retention.

After end of this period, the assembly will no longer be available.

2. Important safety notice

Components identified by \triangle mark have special characteristics important for safety. When replacing any of these components, use only manufacture's specified parts.

3. The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.

4. ISO code (Example: ABS-94HB) of the remarks column shows quality of the material and a flame resisting grade about plastics.

5. RESISTORS & CAPACITORS

Unless otherwise specified;

All resistors are in ohms (Ω) K=1000 Ω , M=1000k Ω

All capacitors are in MICRO FARADS (μ F) P= μ μ F

*Type & Wattage of Resistor

Type					
ERC:Solid		ERX:Metal Film		PQ4R:Carbon	
ERD:Carbon		ERG:Metal Oxide		ERS:Fusible Resistor	
PQRD:Carbon		ER0:Metal Film		ERF:Cement Resistor	
Wattage					
10,16:1/8W		14,25:1/4W		12:1/2W	
1:1W		2:2W		3:3W	
*Type & Voltage of Capacitor					
Type					
ECFD:Semi-Conductor		ECCD,ECKD,ECBT,PQCBC: Ceramic			
ECQS:Styrol		ECQE,ECQV,ECQG: Polyester			
PQCUV:Chip		ECEA,ECSZ:Electrolytic			
ECQMS:Mica		ECQP: Polypropylene			
Voltage					
ECQ Type		ECQG ECQV Type	ECSZ Type	Others	
1H:50V		05:50V	0F:3.15V	0J :6.3V	
2A:100V		1:100V	1A:10V	1A :10V	
2E:250V		2:200V	1V:35V	1C :16V	
2H:500V			0J:6.3V	1E,25:25V	
				1V :35V	
				50,1H:50V	
				1J :63V	
				2A :100V	

14.1. CABINET AND ELECTRICAL PARTS LOCATION

Ref. No.	Part No.	Part Name & Description	Remarks
1	PQDF996Z	SHAFT	
2	PQHR10005Z	SPACER	
3	PQUB14Z2	LEVER	S
4	PSHD1088Z	SCREW	
5	PSHE1106Z	TAPE	
6	PSHR1238Z	SPACER	
7	PSHR1272Z	REKET	
8	PSMH1212X	ANGLE	
9	PSUS1020Z	SPRING	
10	PSUS1021Y	SPRING	
11	XUC25VW	RETAINING RING	

14.2. ACCESSORIES AND PACKING MATERIALS

Ref. No.	Part No.	Part Name & Description	Remarks
A1	XSN4X40+28FY	SCREW	@
A2	J0KG00000019	CORE	
P1	PSPD1188Y	CUSHION	
P2	PSPP1069Z	PROTECTION COVER	
P3	PSZKTD0174M	GIFT BOX	
P4	XZB05X08A03	PROTECTION COVER	
P5	PSPP1077Z	PROTECTION COVER	







14.3. MAIN BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
		(ICS)	
IC1	C1CB00001314	IC	
IC2	C1CB00001314	IC	
IC4	C1CB00001314	IC	
IC5	C0JBAB000504	IC	
IC6	C1CB00001314	IC	
IC7	C0DBAHA00011	IC	
IC9	PSVIPST596CN	IC	
IC10	PQVIS8520F33	IC	S
IC11	C0ABCB000050	IC	
IC12	C0ABCB000050	IC	
IC14	C1CB00001430	IC	
IC200A	EHDHA1846A	IC	
IC200B	EHDHA1846A	IC	
IC200C	EHDHA1846A	IC	
IC200D	EHDHA1846A	IC	
IC200E	EHDHA1846A	IC	
IC200F	EHDHA1846A	IC	
IC200G	EHDHA1846A	IC	
IC200H	EHDHA1846A	IC	
IC200I	EHDHA1846A	IC	
IC200J	EHDHA1846A	IC	
IC200K	EHDHA1846A	IC	
IC200L	EHDHA1846A	IC	
IC200M	EHDHA1846A	IC	
IC200N	EHDHA1846A	IC	
IC200O	EHDHA1846A	IC	
IC200P	EHDHA1846A	IC	
IC201	C1CB00001432	IC	
IC202	C1CB00001432	IC	
IC203	PQVINJM4558M	IC	S
IC250	C1CB00001432	IC	
IC251	C1CB00001432	IC	
IC252	PQVINJM4558M	IC	S
IC800	C0DBZZB00005	IC	
IC801	C0DBAJD00002	IC	
		(TRANSISTORS)	
Q11	PQVTDTA114EU	TRANSISTOR(SI)	S
Q12	B1DHCD000018	TRANSISTOR(SI)	
Q13	B1DHCD000018	TRANSISTOR(SI)	
Q14	B1DFDC000002	TRANSISTOR(SI)	
Q201A	PQVTDTC143E	TRANSISTOR(SI)	S
Q202	2SD1819A	TRANSISTOR(SI)	S
Q203	2SD1819A	TRANSISTOR(SI)	S
Q800	2SD1819A	TRANSISTOR(SI)	S
Q801	2SB1218A	TRANSISTOR(SI)	S
Q802	2SD1819A	TRANSISTOR(SI)	S
Q803	2SB1218A	TRANSISTOR(SI)	S
Q804	B1BBAP000002	TRANSISTOR(SI)	
Q805	B1BDAP000010	TRANSISTOR(SI)	
Q806	B1BBAP000002	TRANSISTOR(SI)	
Q807	B1BDAP000010	TRANSISTOR(SI)	
Q809	PQVTDTC143E	TRANSISTOR(SI)	S
Q810	B1DFBL000002	TRANSISTOR(SI)	

Ref. No.	Part No.	Part Name & Description	Remarks
U1	B1GHCFJJ0007	TRANSISTOR(SI)	
U800	B1GFAFNN0001	TRANSISTOR(SI)	
		(DIODES)	
D10	MA8075	DIODE(SI)	S
D11	MA8051	DIODE(SI)	S
D12	PFVDDGD1FP3T	DIODE(SI)	S
D13	MA142WKTX	DIODE(SI)	S
D14	PFVDDGD1FP3T	DIODE(SI)	S
D15	PFVDDGD1FP3T	DIODE(SI)	S
D202A	MA110	DIODE(SI)	
D203A	MA110	DIODE(SI)	
D203B	MA110	DIODE(SI)	
D203C	MA110	DIODE(SI)	
D203D	MA110	DIODE(SI)	
D203E	MA110	DIODE(SI)	
D203F	MA110	DIODE(SI)	
D203G	MA110	DIODE(SI)	
D203H	MA110	DIODE(SI)	
D203I	MA110	DIODE(SI)	
D203J	MA110	DIODE(SI)	
D203K	MA110	DIODE(SI)	
D203L	MA110	DIODE(SI)	
D203M	MA110	DIODE(SI)	
D203N	MA110	DIODE(SI)	
D203O	MA110	DIODE(SI)	
D203P	MA110	DIODE(SI)	
D204	MA110	DIODE(SI)	
D800	MA8150	DIODE(SI)	
D801	MA8150	DIODE(SI)	
D802	MA8150	DIODE(SI)	
D803	MA8150	DIODE(SI)	
D805	MA8240	DIODE(SI)	
D806	B0HCMR000002	DIODE(SI)	
D808	B0HCMR000002	DIODE(SI)	
LED1	PQVDBRPY1204	LED	S
		(FILTERS)	
FIL1	J0HAA0000020	IC FILTER	
FIL2	J0HAAH000003	IC FILTER	
FIL3	J0HAAH000003	IC FILTER	
FIL4	J0HAAH000003	IC FILTER	
FIL5	J0HAAH000003	IC FILTER	
FIL6	J0HAAH000003	IC FILTER	
FIL7	J0HAAH000003	IC FILTER	
FIL8	J0HAAH000003	IC FILTER	
FIL200	J0HAAH000003	IC FILTER	
FIL201	J0HAAH000003	IC FILTER	
FIL251	J0HAAH000003	IC FILTER	
FIL252	J0HAAH000003	IC FILTER	
L8	PFVF1B221SB	CERAMIC FILTER	
L9	PFVF1B221SB	CERAMIC FILTER	
L11	PFVF1B221SB	CERAMIC FILTER	
L12	PFVF1B221SB	CERAMIC FILTER	
L13	PFVF1B221SB	CERAMIC FILTER	
L14	PFVF1B221SB	CERAMIC FILTER	

Ref. No.	Part No.	Part Name & Description	Remarks
L15	PFVF1B221SB	CERAMIC FILTER	
L16	PFVF1B221SB	CERAMIC FILTER	
L17	PFVF1B221SB	CERAMIC FILTER	
L18	PFVF1B221SB	CERAMIC FILTER	
L19	PFVF1B221SB	CERAMIC FILTER	
L20	PFVF1B221SB	CERAMIC FILTER	
L21	PFVF1B221SB	CERAMIC FILTER	
L22	PFVF1B221SB	CERAMIC FILTER	
L23	PFVF1B221SB	CERAMIC FILTER	
L24	PFVF1B221SB	CERAMIC FILTER	
L25	PFVF1B221SB	CERAMIC FILTER	
L26	PFVF1B221SB	CERAMIC FILTER	
L27	PFVF1B221SB	CERAMIC FILTER	
L28	PFVF1B221SB	CERAMIC FILTER	
L29	PFVF1B221SB	CERAMIC FILTER	
L30	PFVF1B221SB	CERAMIC FILTER	
L31	PFVF1B221SB	CERAMIC FILTER	
L32	PFVF1B221SB	CERAMIC FILTER	
L33	PFVF1B221SB	CERAMIC FILTER	
L34	PFVF1B221SB	CERAMIC FILTER	
L35	PFVF2P600SG	CERAMIC FILTER	
L36	PFVF2P600SG	CERAMIC FILTER	
L37	PFVF1B221SB	CERAMIC FILTER	
L38	PFVF1B221SB	CERAMIC FILTER	
L202	PFVF1B221SB	CERAMIC FILTER	
L203	PFVF1B221SB	CERAMIC FILTER	
L204	PFVF1B221SB	CERAMIC FILTER	
L205	PFVF1B221SB	CERAMIC FILTER	
L206	PFVF1B221SB	CERAMIC FILTER	
L207	PFVF1B221SB	CERAMIC FILTER	
L208	PFVF1B221SB	CERAMIC FILTER	
L209	PFVF1B221SB	CERAMIC FILTER	
		(COILS)	
L7	G1A221C00003	COIL	
L10	PSLQR1V680MT	COIL	
L200A	PSLQR1K102MT	COIL	
L200B	PSLQR1K102MT	COIL	
L200C	PSLQR1K102MT	COIL	
L200D	PSLQR1K102MT	COIL	
L200E	PSLQR1K102MT	COIL	
L200F	PSLQR1K102MT	COIL	
L200G	PSLQR1K102MT	COIL	
L200H	PSLQR1K102MT	COIL	
L200I	PSLQR1K102MT	COIL	
L200J	PSLQR1K102MT	COIL	
L200K	PSLQR1K102MT	COIL	
L200L	PSLQR1K102MT	COIL	
L200M	PSLQR1K102MT	COIL	
L200N	PSLQR1K102MT	COIL	
L200O	PSLQR1K102MT	COIL	
L200P	PSLQR1K102MT	COIL	
L201A	PSLQR1K102MT	COIL	
L201B	PSLQR1K102MT	COIL	
L201C	PSLQR1K102MT	COIL	

Ref. No.	Part No.	Part Name & Description	Remarks
L201D	PSLQR1K102MT	COIL	
L201E	PSLQR1K102MT	COIL	
L201F	PSLQR1K102MT	COIL	
L201G	PSLQR1K102MT	COIL	
L201H	PSLQR1K102MT	COIL	
L201I	PSLQR1K102MT	COIL	
L201J	PSLQR1K102MT	COIL	
L201K	PSLQR1K102MT	COIL	
L201L	PSLQR1K102MT	COIL	
L201M	PSLQR1K102MT	COIL	
L201N	PSLQR1K102MT	COIL	
L201O	PSLQR1K102MT	COIL	
L201P	PSLQR1K102MT	COIL	
		(CONNECTORS)	
CN1	K1KA90B00008	CONNECTOR	
CN200	K1FB150B0039	CONNECTOR	
		(CRYSTAL OSCILLATOR)	
X1	PSVCC0025GT	CRYSTAL OSCILLATOR	S
		(FUSES)	
IP1	K5H502Z00003	FUSE	
IP2	PQBA1N10NMAL	FUSE	S
IP4	K5H751Z00003	FUSE	
IP5	K5H751Z00003	FUSE	
		(JACKS)	
CN201	PQJJ1T011Y	JACK	S
CN202	PQJJ1T011Y	JACK	S
		(PHOTO ELECTRIC TRANSDUCERS)	
PC800	PQVIPC357CN	PHOTO COUPLER	S
PC803	PQVIPC357CN	PHOTO COUPLER	S
PC804	PQVIPC357CN	PHOTO COUPLER	S
		(SCREWS)	
XSB301	XSB3+6VW	SCREW	
XSB302	XSB3+6VW	SCREW	
		(TRANSFORMER)	
T800	G4D1A0000048	TRANSFORMER	
		(RELAYS)	
RL200A	K6B2CGA00094	RELAY	!
RL200B	K6B2CGA00094	RELAY	⚠
RL200C	K6B2CGA00094	RELAY	⚠
RL200D	K6B2CGA00094	RELAY	⚠
RL201A	K6B2CGA00094	RELAY	⚠
RL202A	K6B2CGA00094	RELAY	⚠
RL202B	K6B2CGA00094	RELAY	⚠
RL202C	K6B2CGA00094	RELAY	⚠
RL202D	K6B2CGA00094	RELAY	⚠
RL202E	K6B2CGA00094	RELAY	⚠
RL202F	K6B2CGA00094	RELAY	⚠
RL202G	K6B2CGA00094	RELAY	⚠
RL202H	K6B2CGA00094	RELAY	⚠
RL202I	K6B2CGA00094	RELAY	⚠
RL202J	K6B2CGA00094	RELAY	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
RL202K	K6B2CGA00094	RELAY	
RL202L	K6B2CGA00094	RELAY	
RL202M	K6B2CGA00094	RELAY	
RL202N	K6B2CGA00094	RELAY	
RL202O	K6B2CGA00094	RELAY	
RL202P	K6B2CGA00094	RELAY	
		(VARISTORS)	
ZNR20A	D4EAB470A005	VARISTOR	
ZNR20B	D4EAB470A005	VARISTOR	
ZNR20C	D4EAB470A005	VARISTOR	
ZNR20D	D4EAB470A005	VARISTOR	
ZNR20E	D4EAB470A005	VARISTOR	
ZNR20F	D4EAB470A005	VARISTOR	
ZNR20G	D4EAB470A005	VARISTOR	
ZNR20H	D4EAB470A005	VARISTOR	
ZNR20I	D4EAB470A005	VARISTOR	
ZNR20J	D4EAB470A005	VARISTOR	
ZNR20K	D4EAB470A005	VARISTOR	
ZNR20L	D4EAB470A005	VARISTOR	
ZNR20M	D4EAB470A005	VARISTOR	
ZNR20N	D4EAB470A005	VARISTOR	
ZNR20O	D4EAB470A005	VARISTOR	
ZNR20P	D4EAB470A005	VARISTOR	
ZNR21A	D4EAB220A005	VARISTOR	
ZNR21B	D4EAB220A005	VARISTOR	
ZNR21C	D4EAB220A005	VARISTOR	
ZNR21D	D4EAB220A005	VARISTOR	
ZNR21E	D4EAB220A005	VARISTOR	
ZNR21F	D4EAB220A005	VARISTOR	
ZNR21G	D4EAB220A005	VARISTOR	
ZNR21H	D4EAB220A005	VARISTOR	
ZNR21I	D4EAB220A005	VARISTOR	
ZNR21J	D4EAB220A005	VARISTOR	
ZNR21K	D4EAB220A005	VARISTOR	
ZNR21L	D4EAB220A005	VARISTOR	
ZNR21M	D4EAB220A005	VARISTOR	
ZNR21N	D4EAB220A005	VARISTOR	
ZNR21O	D4EAB220A005	VARISTOR	
ZNR21P	D4EAB220A005	VARISTOR	
ZNR23A	D4EAB470A005	VARISTOR	
ZNR23B	D4EAB470A005	VARISTOR	
ZNR23C	D4EAB470A005	VARISTOR	
ZNR23D	D4EAB470A005	VARISTOR	
ZNR23E	D4EAB470A005	VARISTOR	
ZNR23F	D4EAB470A005	VARISTOR	
ZNR23G	D4EAB470A005	VARISTOR	
ZNR23H	D4EAB470A005	VARISTOR	
ZNR23I	D4EAB470A005	VARISTOR	
ZNR23J	D4EAB470A005	VARISTOR	
ZNR23K	D4EAB470A005	VARISTOR	
ZNR23L	D4EAB470A005	VARISTOR	
ZNR23M	D4EAB470A005	VARISTOR	
ZNR23N	D4EAB470A005	VARISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
ZNR23O	D4EAB470A005	VARISTOR	
ZNR23P	D4EAB470A005	VARISTOR	
		(COMPONENTS PARTS)	
RA1	D1HA1038A005	RESISTOR ARRAY, 10K	
RA3	D1HA1038A005	RESISTOR ARRAY, 10K	
RA7	D1HA1038A005	RESISTOR ARRAY, 10K	
RA8	D1HA1038A005	RESISTOR ARRAY, 10K	
RA9	D1HA1038A005	RESISTOR ARRAY, 10K	
RA12	EXB38V103JV	RESISTOR ARRAY, 10K	
RA16	EXB38V103JV	RESISTOR ARRAY, 10K	
RA20	EXRV8V470JV	RESISTOR ARRAY, 47	S
RA21	EXRV8V470JV	RESISTOR ARRAY, 47	S
RA22	EXRV8V470JV	RESISTOR ARRAY, 47	S
RA23	EXRV8V470JV	RESISTOR ARRAY, 47	S
RA24	EXRV8V470JV	RESISTOR ARRAY, 47	S
RA25	EXRV8V470JV	RESISTOR ARRAY, 47	S
RA26	D1HA1038A005	RESISTOR ARRAY, 10K	
RA28	D1HA1038A005	RESISTOR ARRAY, 10K	
RA29	D1HA1038A005	RESISTOR ARRAY, 10K	
		(RESISTORS)	
R11	ERJ3GEYJ104	100K	
R12	ERJ3GEYJ104	100K	
R13	ERJ3GEYJ104	100K	
R14	ERJ3GEYJ104	100K	
R15	ERJ3GEYJ104	100K	
R16	ERJ3GEYJ104	100K	
R17	ERJ3GEYJ104	100K	
R18	ERJ3GEYJ104	100K	
R19	ERJ3GEYJ104	100K	
R20	ERJ3GEYJ104	100K	
R21	ERJ3GEYJ104	100K	
R22	ERJ3GEYJ104	100K	
R23	ERJ3GEYJ104	100K	
R24	ERJ3GEYJ104	100K	
R25	ERJ3GEYJ104	100K	
R26	ERJ3GEYJ104	100K	
R30	ERJ3GEYJ104	100K	
R31	ERJ3GEYJ104	100K	
R32	ERJ3GEYJ104	100K	
R33	ERJ3GEYJ104	100K	
R34	ERJ3GEYJ104	100K	
R35	ERJ3GEYJ104	100K	
R36	ERJ3GEYJ104	100K	
R37	ERJ3GEYJ104	100K	
R40	ERJ3GEYJ104	100K	
R41	ERJ3GEYJ104	100K	
R42	ERJ3GEYJ104	100K	
R43	ERJ3GEYJ104	100K	
R44	ERJ3GEYJ104	100K	
R45	ERJ3GEYJ104	100K	
R46	ERJ3GEYJ104	100K	
R47	ERJ3GEYJ104	100K	
R65	ERJ3GEYJ104	100K	
R66	ERJ3GEYJ104	100K	

Ref. No.	Part No.	Part Name & Description	Remarks
R67	ERJ3GEYJ104	100K	
R68	ERJ3GEYJ104	100K	
R69	ERJ3GEYJ104	100K	
R70	ERJ3GEYJ104	100K	
R71	ERJ3GEYJ104	100K	
R72	ERJ3GEYJ104	100K	
R75	ERJ3GEYJ104	100K	
R76	ERJ3GEYJ104	100K	
R77	ERJ3GEYJ104	100K	
R78	ERJ3GEYJ104	100K	
R79	ERJ3GEYJ104	100K	
R80	ERJ3GEYJ104	100K	
R81	ERJ3GEYJ104	100K	
R82	ERJ3GEYJ104	100K	
R84	ERJ3GEYJ104	100K	
R85	ERJ3GEYJ104	100K	
R86	ERJ3GEYJ104	100K	
R87	ERJ3GEYJ104	100K	
R88	ERJ3GEYJ104	100K	
R89	ERJ3GEYJ104	100K	
R90	ERJ3GEYJ104	100K	
R91	ERJ3GEYJ104	100K	
R93	ERJ3GEYJ104	100K	
R94	ERJ3GEYJ104	100K	
R95	ERJ3GEYJ104	100K	
R96	ERJ3GEYJ104	100K	
R97	ERJ3GEYJ104	100K	
R98	ERJ3GEYJ104	100K	
R99	ERJ3GEYJ104	100K	
R100	ERJ3GEYJ104	100K	
R109	ERJ3GEYJ105	1M	
R113	ERJ3GEYJ103	10K	
R116	ERJ3GEYJ103	10K	
R117	ERJ3GEYJ103	10K	
R118	ERJ3GEYJ102	1K	
R119	ERJ3GEYJ151	150	
R120	ERJ3GEYJ151	150	
R121	ERJ3GEYJ103	10K	
R122	ERJ3GEYJ391	390	
R123	ERJ3GEYJ681	680	
R124	ERJ3GEYJ681	680	
R125	ERJ3GEYJ102	1K	
R126	ERJ3GEYJ103	10K	
R127	ERJ3GEYJ681	680	
R128	ERJ3GEYJ681	680	
R129	ERJ3GEYJ102	1K	
R130	ERJ3GEYJ103	10K	
R131	ERJ3GEYJ103	10K	
R132	ERJ3GEYJ103	10K	
R133	ERJ3GEYJ103	10K	
R134	ERJ3GEYJ560	56	
R136	ERJ3GEYJ103	10K	
R137	ERJ3GEYJ103	10K	
R138	ERJ3GEYJ101	100	

Ref. No.	Part No.	Part Name & Description	Remarks
R139	ERJ3GEYJ101	100	
R140	ERJ3GEYJ560	56	
R141	ERJ3GEYJ103	10K	
R143	ERJ3GEYJ470	47	
R144	ERJ3GEYJ470	47	
R145	ERJ3GEYJ470	47	
R146	ERJ3GEYJ470	47	
R148	ERJ3GEYJ103	10K	
R149	ERJ3GEYJ220	22	
R150	ERJ3GEYJ220	22	
R151	ERJ3GEYJ103	10K	
R152	ERJ3GEYJ220	22	
R153	ERJ3GEYJ220	22	
R154	ERJ3GEYJ220	22	
R155	ERJ3GEYJ220	22	
R156	ERJ3GEYJ220	22	
R157	ERJ3GEYJ220	22	
R158	ERJ3GEYJ220	22	
R159	ERJ3GEYJ220	22	
R160	ERJ3GEYJ221	220	
R161	PQ4R18XJ223	22K	S
R170	ERJ3GEYJ103	10K	
R171	ERJ3GEYJ101	100	
R172	ERJ3GEYJ101	100	
R202A	ERJ3GEYJ333	33K	
R202B	ERJ3GEYJ333	33K	
R202C	ERJ3GEYJ333	33K	
R202D	ERJ3GEYJ333	33K	
R202E	ERJ3GEYJ333	33K	
R202F	ERJ3GEYJ333	33K	
R202G	ERJ3GEYJ333	33K	
R202H	ERJ3GEYJ333	33K	
R202I	ERJ3GEYJ333	33K	
R202J	ERJ3GEYJ333	33K	
R202K	ERJ3GEYJ333	33K	
R202L	ERJ3GEYJ333	33K	
R202M	ERJ3GEYJ333	33K	
R202N	ERJ3GEYJ333	33K	
R202O	ERJ3GEYJ333	33K	
R202P	ERJ3GEYJ333	33K	
R203A	ERJ1WYJ102	1K	S
R203B	ERJ1WYJ102	1K	S
R203C	ERJ1WYJ102	1K	S
R203D	ERJ1WYJ102	1K	S
R203E	ERJ1WYJ102	1K	S
R203F	ERJ1WYJ102	1K	S
R203G	ERJ1WYJ102	1K	S
R203H	ERJ1WYJ102	1K	S
R203I	ERJ1WYJ102	1K	S
R203J	ERJ1WYJ102	1K	S
R203K	ERJ1WYJ102	1K	S
R203L	ERJ1WYJ102	1K	S
R203M	ERJ1WYJ102	1K	S
R203N	ERJ1WYJ102	1K	S

Ref. No.	Part No.	Part Name & Description	Remarks
R203O	ERJ1WYJ102	1K	S
R203P	ERJ1WYJ102	1K	S
R206A	PQ4R10XJ221	220	S
R207	ERJ3GEYJ220	22	
R208	ERJ3GEYJ220	22	
R209	ERJ3GEYJ103	10K	
R210	ERJ3GEYJ103	10K	
R211	ERJ3GEYJ103	10K	
R212	ERJ3GEYJ103	10K	
R213	ERJ3GEYJ103	10K	
R214	ERJ3GEYJ103	10K	
R215	ERJ3GEYJ103	10K	
R216	ERJ3GEYJ103	10K	
R217	ERJ3GEYJ103	10K	
R218	ERJ3GEYJ103	10K	
R219	ERJ3GEYJ103	10K	
R220	ERJ3GEYJ103	10K	
R221	ERJ3GEYJ103	10K	
R222	ERJ3GEYJ103	10K	
R223	ERJ3GEYJ103	10K	
R224	ERJ3GEYJ103	10K	
R225	ERJ3GEYJ103	10K	
R226	ERJ3GEYJ103	10K	
R227	ERJ3GEYJ682	6.8K	
R228	ERJ3GEYJ104	100K	
R231	ERJ3GEYJ104	100K	
R234A	ERJ3GEYJ103	10K	
R235	ERJ3GEYJ682	6.8K	
R236	PQ4R18XJ000	0	S
R250	ERJ3GEYJ220	22	
R251	ERJ3GEYJ220	22	
R252	ERJ3GEYJ103	10K	
R253	ERJ3GEYJ103	10K	
R254	ERJ3GEYJ103	10K	
R255	ERJ3GEYJ103	10K	
R256	ERJ3GEYJ103	10K	
R257	ERJ3GEYJ103	10K	
R258	ERJ3GEYJ103	10K	
R259	ERJ3GEYJ103	10K	
R260	ERJ3GEYJ103	10K	
R261	ERJ3GEYJ103	10K	
R262	ERJ3GEYJ103	10K	
R263	ERJ3GEYJ103	10K	
R264	ERJ3GEYJ103	10K	
R265	ERJ3GEYJ103	10K	
R266	ERJ3GEYJ103	10K	
R267	ERJ3GEYJ103	10K	
R268	ERJ3GEYJ104	100K	
R271	ERJ3GEYJ104	100K	
R274	ERJ3GEYJ101	100	
R275	ERJ3GEYJ101	100	
R276	ERJ3GEYJ101	100	
R277	ERJ3GEYJ101	100	
R278	ERJ3GEYJ101	100	

Ref. No.	Part No.	Part Name & Description	Remarks
R279	ERJ3GEYJ101	100	
R280	ERJ3GEYJ101	100	
R281	ERJ3GEYJ101	100	
R282	ERJ3GEYJ103	10K	
R800	ERJ3GEYJ151	150	
R801	ERJ3GEYJ151	150	
R802	ERJ3GEYJ681	680	
R803	ERJ3GEYJ681	680	
R804	ERJ3GEYJ681	680	
R805	ERJ3GEYJ681	680	
R806	PQ4R10XJ101	100	S
R807	PQ4R10XJ101	100	S
R808	PQ4R18XJ104	100K	S
R809	PQ4R18XJ104	100K	S
R810	PQ4R18XJ104	100K	S
R811	PQ4R18XJ104	100K	S
R812	ERJ3GEYJ103	10K	
R813	ERJ3GEYJ103	10K	
R814	ERJ3GEYJ105	1M	
R815	ERJ3GEYJ105	1M	
R816	ERJ3GEYJ103	10K	
R817	ERJ3GEYJ103	10K	
R818	ERJ3GEYJ752	7.5K	
R819	ERJ3GEYJ752	7.5K	
R820	ERJ3GEYJ473	47K	
R821	ERJ3GEYJ473	47K	
R822	ERJ3EKF3903	390K	
R823	ERJ3EKF3903	390K	
R824	ERJ3EKF2002	20K	
R825	ERJ3EKF2002	20K	
R826	ERJ3EKF1803	180K	
R827	ERJ3EKF1803	180K	
R828	PQ4R10XJ472	4.7K	S
R829	ERJ3EKF2002	20K	
R830	ERJ3GEYF393	39K	S
R831	ERJ3EKF1501	1.5K	
R832	ERJ3GEYJ125	1.2M	
R833	ERJ3GEYJ102	1K	
R834	ERJ3GEYJ223	22K	
R836	PQ4R18XJ473	47K	S
R837	ERJ3GEYJ103	10K	
R840	ERJ3GEYJ222	2.2K	
R841	ERJ3GEYJ220	22	
R842	ERJ3GEYJ223	22K	
R843	D0GR1R0JA001	1	
R844	ERJ3GEYJ220	22	
R845	PQ4R10XJ472	4.7K	S
R846	ERJ3GEYJ102	1K	
R847	ERJ3GEYJ123	12K	
R848	PQ4R10XJ101	100	S
R849	PQ4R10XJ101	100	S
R850	PQ4R18XJ223	22K	S
R851	ERJ3GEYJ103	10K	
R852	ERJ3GEYJ103	10K	

Ref. No.	Part No.	Part Name & Description	Remarks
IP3	PQ4R18XJ000	0	S
L5	PQ4R18XJ000	0	S
L6	PQ4R18XJ000	0	S
L39	PQ4R10XJ000	0	S
L40	PQ4R10XJ000	0	S
L41	PQ4R10XJ000	0	S
L42	PQ4R10XJ000	0	S
L43	PQ4R10XJ000	0	S
L44	PQ4R10XJ000	0	S
L45	PQ4R10XJ000	0	S
L46	PQ4R10XJ000	0	S
L47	PQ4R10XJ000	0	S
L48	PQ4R10XJ000	0	S
L49	PQ4R10XJ000	0	S
L50	PQ4R10XJ000	0	S
L51	PQ4R10XJ000	0	S
L52	PQ4R10XJ000	0	S
L53	PQ4R10XJ000	0	S
J1	ERJ3GEY0R00	0	
J2	ERJ3GEY0R00	0	
J3	ERJ3GEY0R00	0	
J4	ERJ3GEY0R00	0	
J7	ERJ3GEY0R00	0	
J8	ERJ3GEY0R00	0	
J9	ERJ3GEY0R00	0	
J10	ERJ3GEY0R00	0	
J11	ERJ3GEY0R00	0	
J12	ERJ3GEY0R00	0	
J13	ERJ3GEY0R00	0	
J14	PQ4R18XJ000	0	S
J18	ERJ3GEY0R00	0	
J22	ERJ3GEY0R00	0	
J23	ERJ3GEY0R00	0	
J26	ERJ3GEY0R00	0	
J28	ERJ3GEY0R00	0	
J31	ERJ3GEY0R00	0	
J34	ERJ3GEY0R00	0	
J37	ERJ3GEY0R00	0	
J38	ERJ3GEY0R00	0	
J202A	ERJ3GEY0R00	0	
J202B	ERJ3GEY0R00	0	
J202C	ERJ3GEY0R00	0	
J202D	ERJ3GEY0R00	0	
J202E	ERJ3GEY0R00	0	
J202F	ERJ3GEY0R00	0	
J202G	ERJ3GEY0R00	0	
J202H	ERJ3GEY0R00	0	
J202I	ERJ3GEY0R00	0	
J202J	ERJ3GEY0R00	0	
J202K	ERJ3GEY0R00	0	
J202L	ERJ3GEY0R00	0	
J202M	ERJ3GEY0R00	0	
J202N	ERJ3GEY0R00	0	
J202O	ERJ3GEY0R00	0	

Ref. No.	Part No.	Part Name & Description	Remarks
J202P	ERJ3GEY0R00	0	
		(CAPACITORS)	
C1	ECUV1C104KBV	0.1	
C2	ECUV1C104KBV	0.1	
C3	ECUV1C104KBV	0.1	
C4	ECUV1C104KBV	0.1	
C5	ECUV1C104KBV	0.1	
C6	ECUV1C104KBV	0.1	
C7	ECUV1C104KBV	0.1	
C8	ECUV1C104KBV	0.1	
C9	ECUV1C104KBV	0.1	
C10	ECUV1C104KBV	0.1	
C11	ECUV1C104KBV	0.1	
C12	ECUV1C104KBV	0.1	
C13	ECUV1C104KBV	0.1	
C14	ECUV1C104KBV	0.1	
C15	ECUV1C104KBV	0.1	
C16	ECUV1C104KBV	0.1	
C17	ECUV1E104ZFV	0.1	
C18	ECUV1E104ZFV	0.1	
C21	ECUV1C104KBV	0.1	
C22	ECUV1C104KBV	0.1	
C23	ECUV1C104KBV	0.1	
C24	ECUV1C104KBV	0.1	
C25	ECUV1C104KBV	0.1	
C26	ECUV1C104KBV	0.1	
C27	ECUV1C104KBV	0.1	
C28	ECUV1C104KBV	0.1	
C29	ECUV1C104KBV	0.1	
C30	ECUV1C104KBV	0.1	
C31	ECUV1C104KBV	0.1	
C32	ECUV1C104KBV	0.1	
C33	ECUV1C104KBV	0.1	
C34	ECUV1C104KBV	0.1	
C35	ECUV1C104KBV	0.1	
C36	ECUV1C104KBV	0.1	
C42	ECUV1E104ZFV	0.1	
C45	ECUV1E104ZFV	0.1	
C48	ECUV1E104ZFV	0.1	
C49	ECUV1H180JCV	18P	
C50	ECUV1H180JCV	18P	
C51	EEVUD1A220MR	22	
C52	ECUV1E104ZFV	0.1	
C53	PQCUV1A225ZF	2.2	
C54	ECUV1A105ZFV	1	
C55	ECUV1E104ZFV	0.1	
C56	ECUV1E104ZFV	0.1	
C57	PQCUV1A225ZF	2.2	
C58	ECUV1A105ZFV	1	
C59	ECUV1E104ZFV	0.1	
C60	EEVUD0J101MP	100	
C62	ECUV1E104ZFV	0.1	
C63	ECUV1E104ZFV	0.1	
C64	EEVUD1E680MP	68	

Ref. No.	Part No.	Part Name & Description	Remarks
C65	ECUV1E104ZFV	0.1	
C66	EEVUD1E151MP	150	
C67	F2G1V1000008	10	
C68	ECUV1E104ZFV	0.1	
C70	F2G1H1000010	10	
C71	ECUV1E104ZFV	0.1	
C73	ECUV1E104ZFV	0.1	
C74	ECUV1A105ZFV	1	
C75	PQCUV1A225ZF	2.2	
C76	ECUV1A105ZFV	1	
C77	PQCUV1A225ZF	2.2	
C78	ECUV1A105ZFV	1	
C79	PQCUV1A225ZF	2.2	
C80	ECUV1A105ZFV	1	
C81	PQCUV1A225ZF	2.2	
C82	ECUV1E104ZFV	0.1	
C83	ECUV1E104ZFV	0.1	
C84	ECUV1E104ZFV	0.1	
C85	ECUV1E104ZFV	0.1	
C86	ECUV1E104ZFV	0.1	
C87	ECUV1E104ZFV	0.1	
C88	ECUV1E104ZFV	0.1	
C89	ECUV1E104ZFV	0.1	
C90	ECUV1E104ZFV	0.1	
C91	ECUV1H332KBV	0.0033	
C92	ECUV1E104ZFV	0.1	
C93	ECUV1E104ZFV	0.1	
C94	ECUV1E104ZFV	0.1	
C95	ECUV1E104ZFV	0.1	
C96	ECUV1E104ZFV	0.1	
C97	ECUV1E104ZFV	0.1	
C98	ECUV1E104ZFV	0.1	
C200A	ECEA1HU100	10	S
C200B	ECEA1HU100	10	S
C200C	ECEA1HU100	10	S
C200D	ECEA1HU100	10	S
C200E	ECEA1HU100	10	S
C200F	ECEA1HU100	10	S
C200G	ECEA1HU100	10	S
C200H	ECEA1HU100	10	S
C200I	ECEA1HU100	10	S
C200J	ECEA1HU100	10	S
C200K	ECEA1HU100	10	S
C200L	ECEA1HU100	10	S
C200M	ECEA1HU100	10	S
C200N	ECEA1HU100	10	S
C200O	ECEA1HU100	10	S
C200P	ECEA1HU100	10	S
C201A	PSCEA1HN100	10P	
C201B	PSCEA1HN100	10P	
C201C	PSCEA1HN100	10P	
C201D	PSCEA1HN100	10P	
C201E	PSCEA1HN100	10P	
C201F	PSCEA1HN100	10P	

Ref. No.	Part No.	Part Name & Description	Remarks
C201G	PSCEA1HN100	10P	
C201H	PSCEA1HN100	10P	
C201I	PSCEA1HN100	10P	
C201J	PSCEA1HN100	10P	
C201K	PSCEA1HN100	10P	
C201L	PSCEA1HN100	10P	
C201M	PSCEA1HN100	10P	
C201N	PSCEA1HN100	10P	
C201O	PSCEA1HN100	10P	
C201P	PSCEA1HN100	10P	
C202A	PSCEA1HN4R7	4.7	
C202B	PSCEA1HN4R7	4.7	
C202C	PSCEA1HN4R7	4.7	
C202D	PSCEA1HN4R7	4.7	
C202E	PSCEA1HN4R7	4.7	
C202F	PSCEA1HN4R7	4.7	
C202G	PSCEA1HN4R7	4.7	
C202H	PSCEA1HN4R7	4.7	
C202I	PSCEA1HN4R7	4.7	
C202J	PSCEA1HN4R7	4.7	
C202K	PSCEA1HN4R7	4.7	
C202L	PSCEA1HN4R7	4.7	
C202M	PSCEA1HN4R7	4.7	
C202N	PSCEA1HN4R7	4.7	
C202O	PSCEA1HN4R7	4.7	
C202P	PSCEA1HN4R7	4.7	
C203	ECUV1E104ZFV	0.1	
C203A	ECUV1E104ZFV	0.1	
C203B	ECUV1E104ZFV	0.1	
C203C	ECUV1E104ZFV	0.1	
C203D	ECUV1E104ZFV	0.1	
C203E	ECUV1E104ZFV	0.1	
C203F	ECUV1E104ZFV	0.1	
C203G	ECUV1E104ZFV	0.1	
C203H	ECUV1E104ZFV	0.1	
C203I	ECUV1E104ZFV	0.1	
C203J	ECUV1E104ZFV	0.1	
C203K	ECUV1E104ZFV	0.1	
C203L	ECUV1E104ZFV	0.1	
C203M	ECUV1E104ZFV	0.1	
C203N	ECUV1E104ZFV	0.1	
C203O	ECUV1E104ZFV	0.1	
C203P	ECUV1E104ZFV	0.1	
C204	ECUV1C224ZFV	0.22	
C204A	ECUV1E104ZFV	0.1	
C204B	ECUV1E104ZFV	0.1	
C204C	ECUV1E104ZFV	0.1	
C204D	ECUV1E104ZFV	0.1	
C204E	ECUV1E104ZFV	0.1	
C204F	ECUV1E104ZFV	0.1	
C204G	ECUV1E104ZFV	0.1	
C204H	ECUV1E104ZFV	0.1	
C204I	ECUV1E104ZFV	0.1	
C204J	ECUV1E104ZFV	0.1	

Ref. No.	Part No.	Part Name & Description	Remarks
C204K	ECUV1E104ZFB	0.1	
C204L	ECUV1E104ZFB	0.1	
C204M	ECUV1E104ZFB	0.1	
C204N	ECUV1E104ZFB	0.1	
C204O	ECUV1E104ZFB	0.1	
C204P	ECUV1E104ZFB	0.1	
C205	ECUV1E104ZFB	0.1	
C206	ECUV1E104ZFB	0.1	
C207	ECUV1E104ZFB	0.1	
C208	ECUV1E104ZFB	0.1	
C209	PQCUV1C105ZF	1	S
C210	ECUV1A105ZFB	1	
C211	ECUV1C224ZFB	0.22	
C212	ECUV1E104ZFB	0.1	
C213	ECUV1E104ZFB	0.1	
C214	ECUV1E104ZFB	0.1	
C215	ECUV1E104ZFB	0.1	
C216	PQCUV1C105ZF	1	S
C217	ECUV1A105ZFB	1	
C218	PQCUV1A225ZF	2.2	S
C219	ECUV1A105ZFB	1	
C220	PQCUV1A225ZF	2.2	S
C221	ECUV1C104KBV	0.1	
C222	ECUV1C104KBV	0.1	
C223	ECUV1C104KBV	0.1	
C224	ECUV1C104KBV	0.1	
C225	ECUV1C104KBV	0.1	
C226	ECUV1C104KBV	0.1	
C227	ECUV1C104KBV	0.1	
C228	ECUV1C104KBV	0.1	
C250	ECUV1E104ZFB	0.1	
C251	ECUV1C224ZFB	0.22	
C252	ECUV1E104ZFB	0.1	
C253	ECUV1E104ZFB	0.1	
C254	ECUV1E104ZFB	0.1	
C255	ECUV1E104ZFB	0.1	
C256	PQCUV1C105ZF	1	S
C257	ECUV1A105ZFB	1	
C258	ECUV1C224ZFB	0.22	
C259	ECUV1E104ZFB	0.1	
C260	ECUV1E104ZFB	0.1	
C261	ECUV1E104ZFB	0.1	
C262	ECUV1E104ZFB	0.1	
C263	PQCUV1C105ZF	1	S
C264	ECUV1A105ZFB	1	
C265	PQCUV1A225ZF	2.2	S
C266	ECUV1A105ZFB	1	
C267	PQCUV1A225ZF	2.2	S
C268	ECUV1C104KBV	0.1	
C269	ECUV1C104KBV	0.1	
C270	ECUV1C104KBV	0.1	
C271	ECUV1C104KBV	0.1	
C272	ECUV1C104KBV	0.1	
C273	ECUV1C104KBV	0.1	

Ref. No.	Part No.	Part Name & Description	Remarks
C274	ECUV1C104KBV	0.1	
C275	ECUV1C104KBV	0.1	
C800	PSCUV2EY104K	0.1	S
C801	PSCUV2EY104K	0.1	S
C802	ECUV1E104ZFV	0.1	
C803	ECUV1E104ZFV	0.1	
C804	PQCUV1E823KB	0.082	
C805	PQCUV1E823KB	0.082	
C806	PQCUV1E823KB	0.082	
C807	PQCUV1E823KB	0.082	
C808	ECUV1E104ZFV	0.1	
C809	ECA2EHG100	10P	
C811	ECA2EHG100	10P	
C812	ECUV1C473KBV	0.047	
C813	ECUV1E104ZFV	0.1	
C814	ECUV1H471JCV	470P	S
C815	ECUV1E104ZFV	0.1	
C816	ECUV1E104ZFV	0.1	
C817	ECA1HHG101	100P	
C818	ECUV1E104ZFV	0.1	

15. FOR SCHEMATIC DIAGRAM

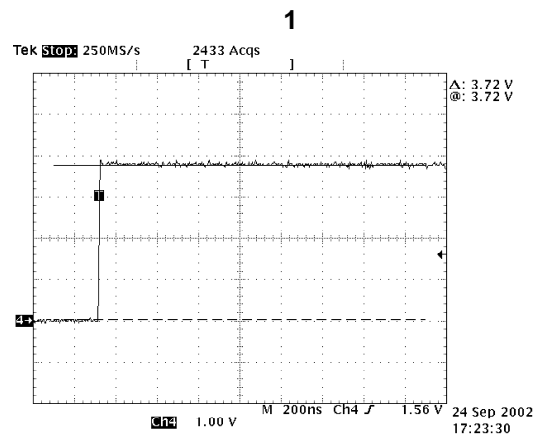
Note:

- DC voltage measurements are taken with voltmeter from the negative voltage line.

Important Safety Notice:
Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only the manufacturer's specified parts.

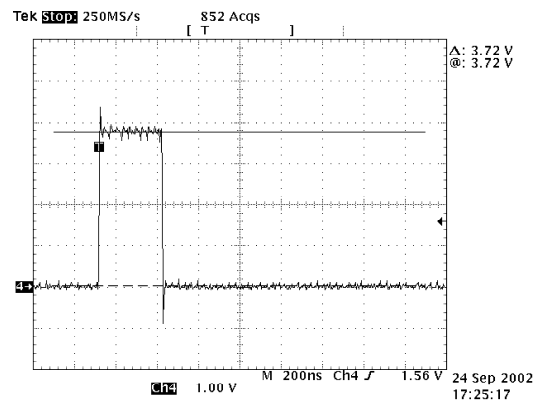
- This schematic diagram may be modified at any time with the development of new technology.

No.1()



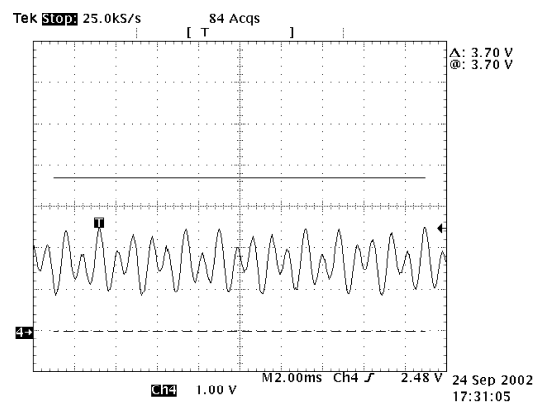
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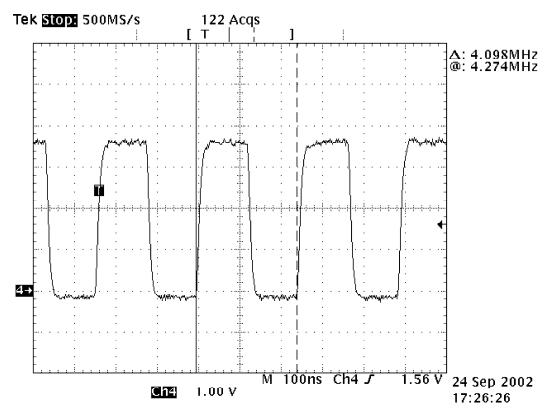
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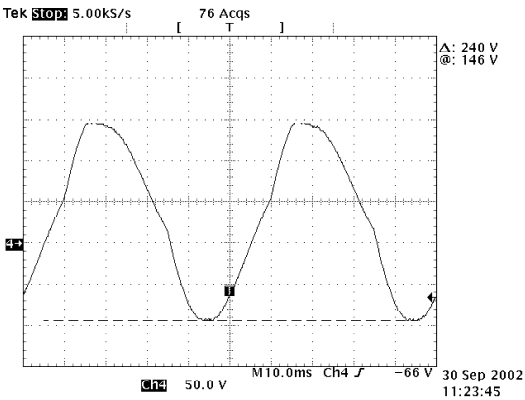
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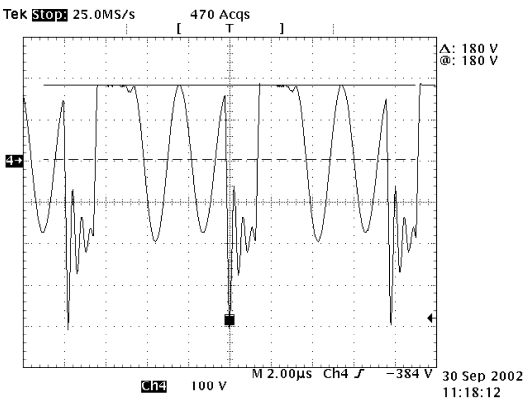
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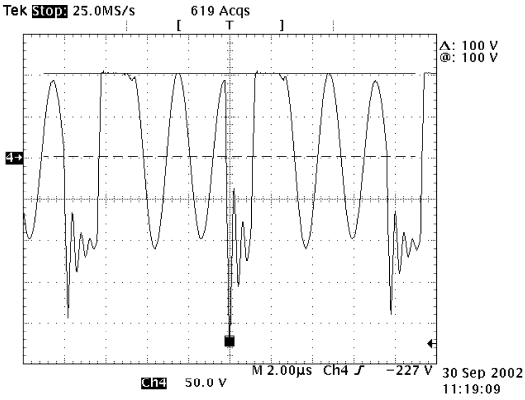
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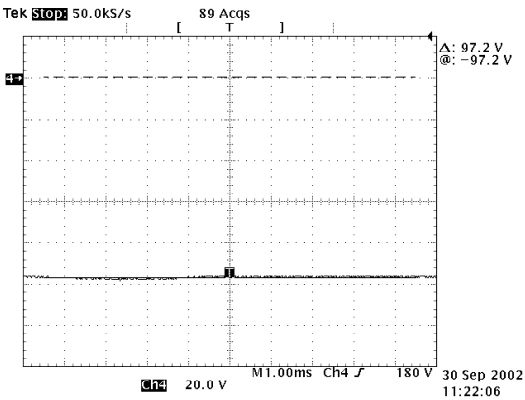
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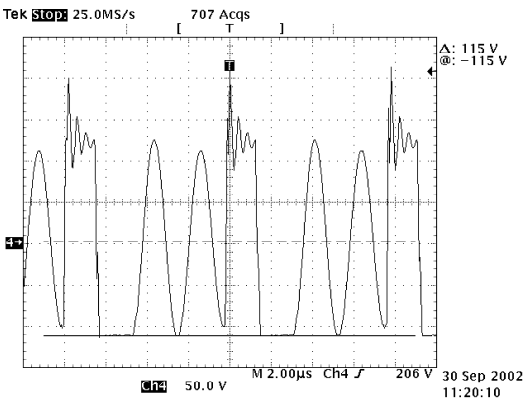
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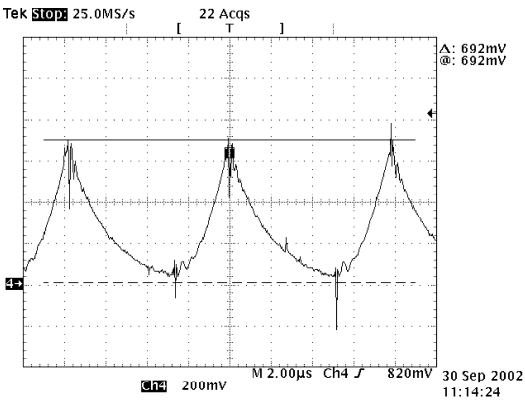
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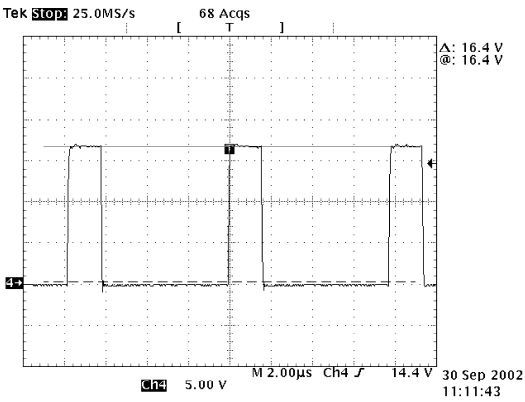
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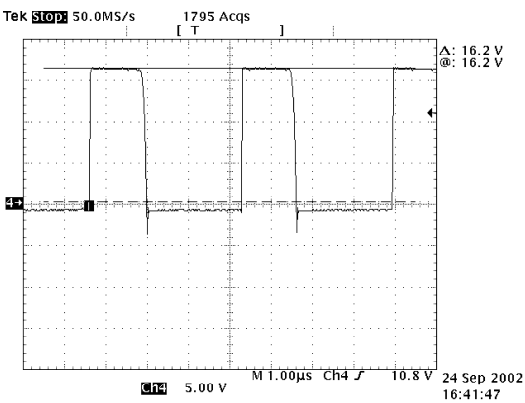
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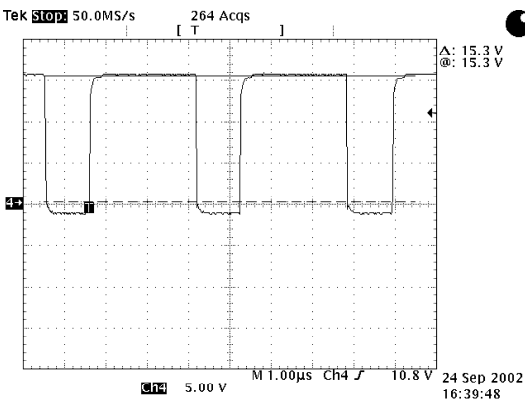
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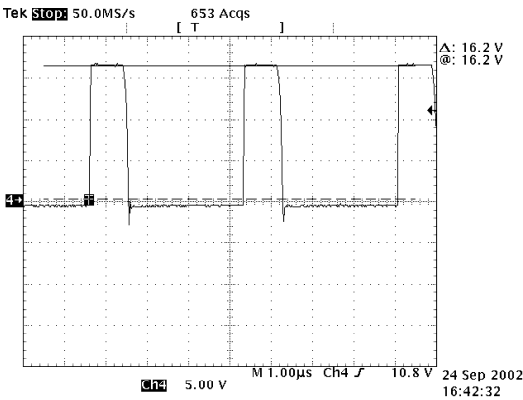
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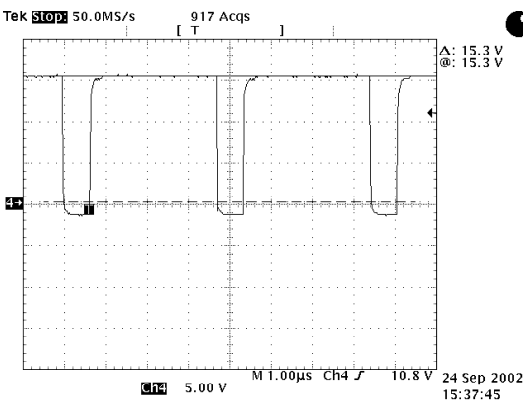
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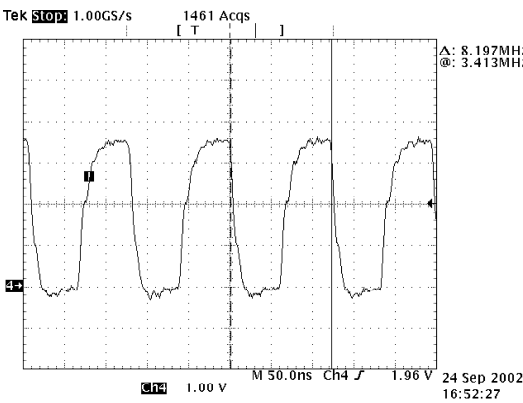
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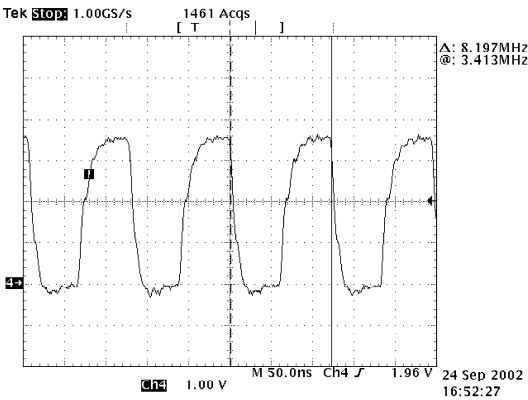
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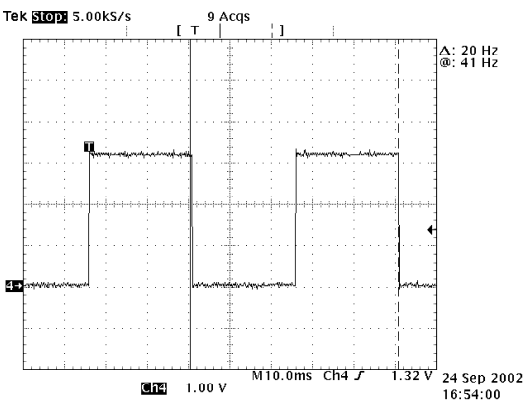
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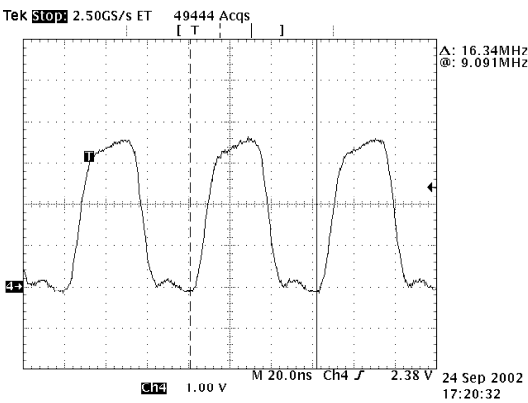
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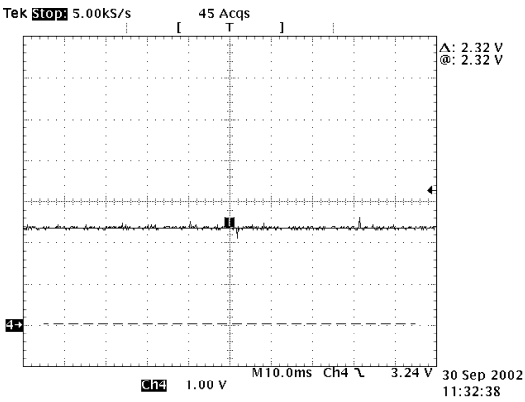
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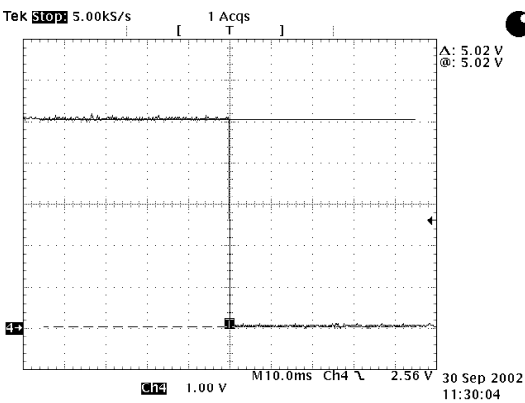
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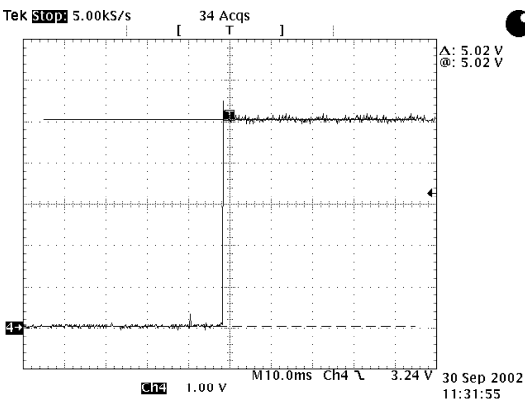
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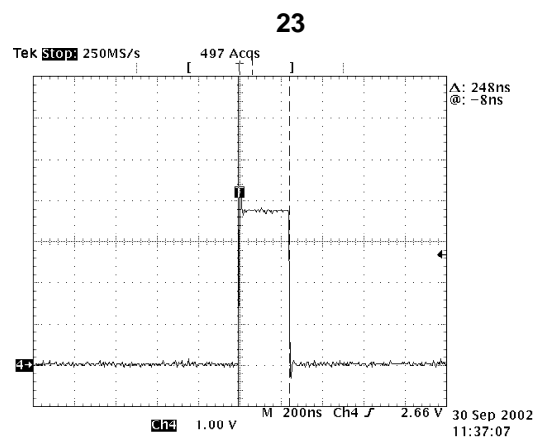


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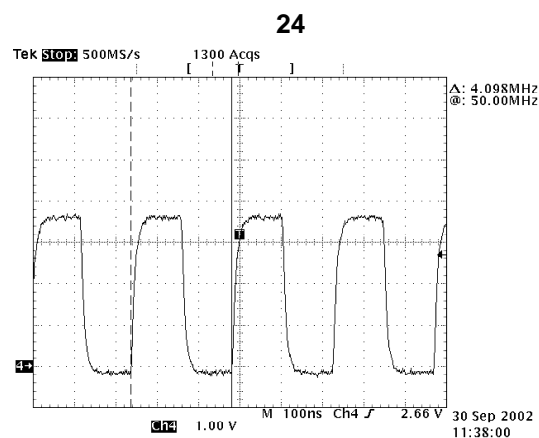
22



No.2()



No.2()



16. SCHEMATIC DIAGRAM

16.1. No.1

16.2. No.2

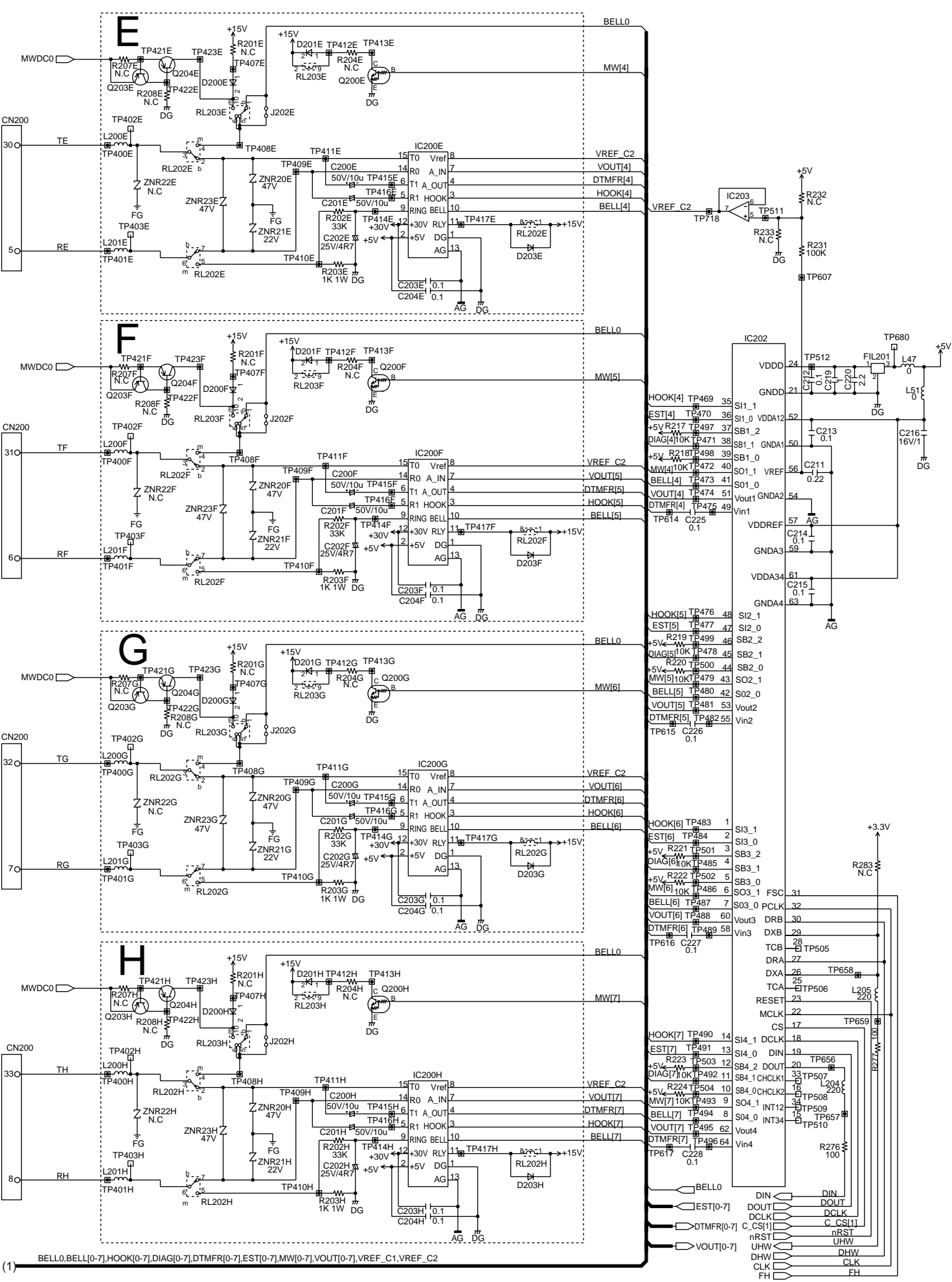
16.3. No.3

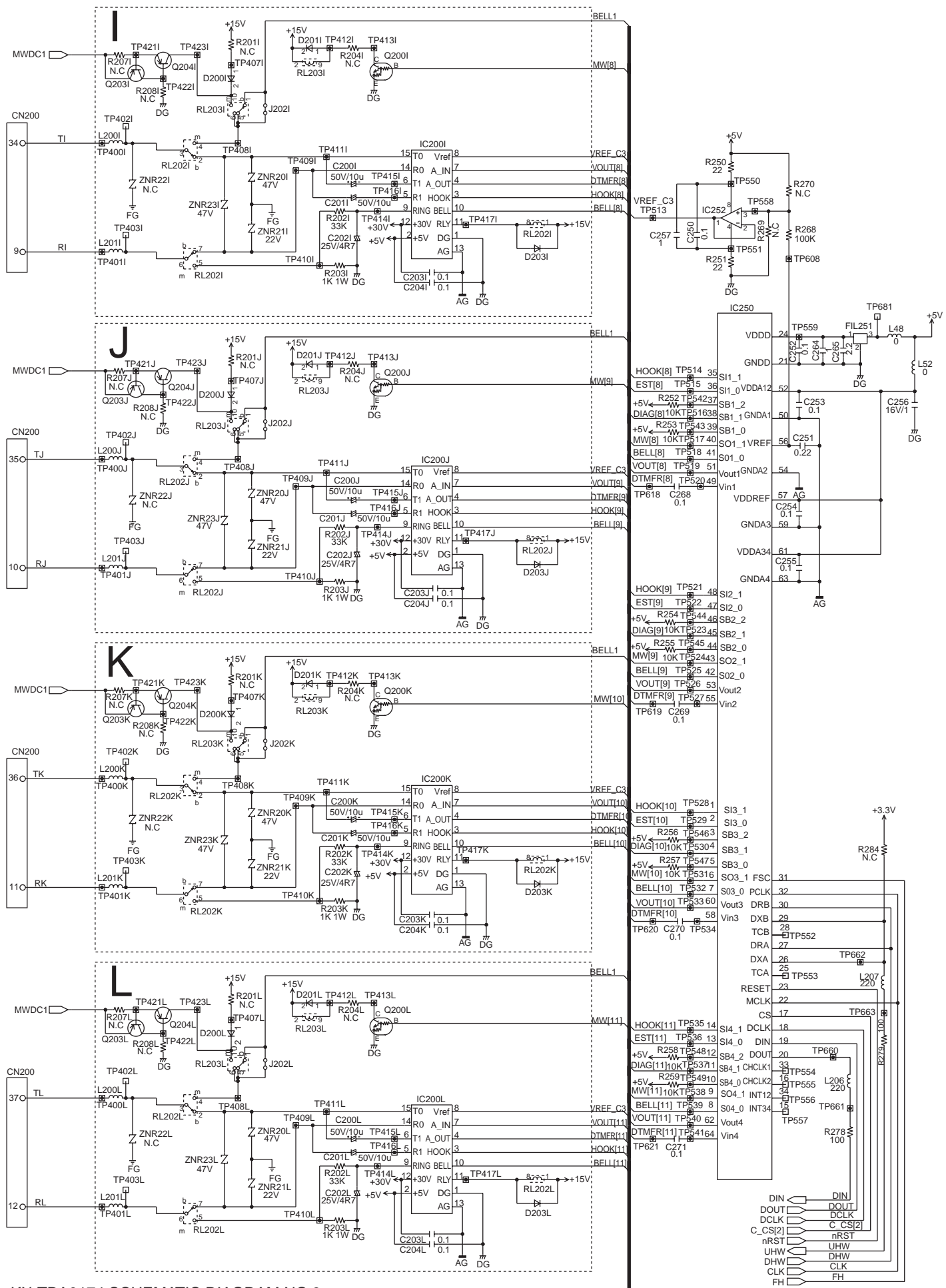
17. PRINTED CIRCUIT BOARD

17.1. Component View

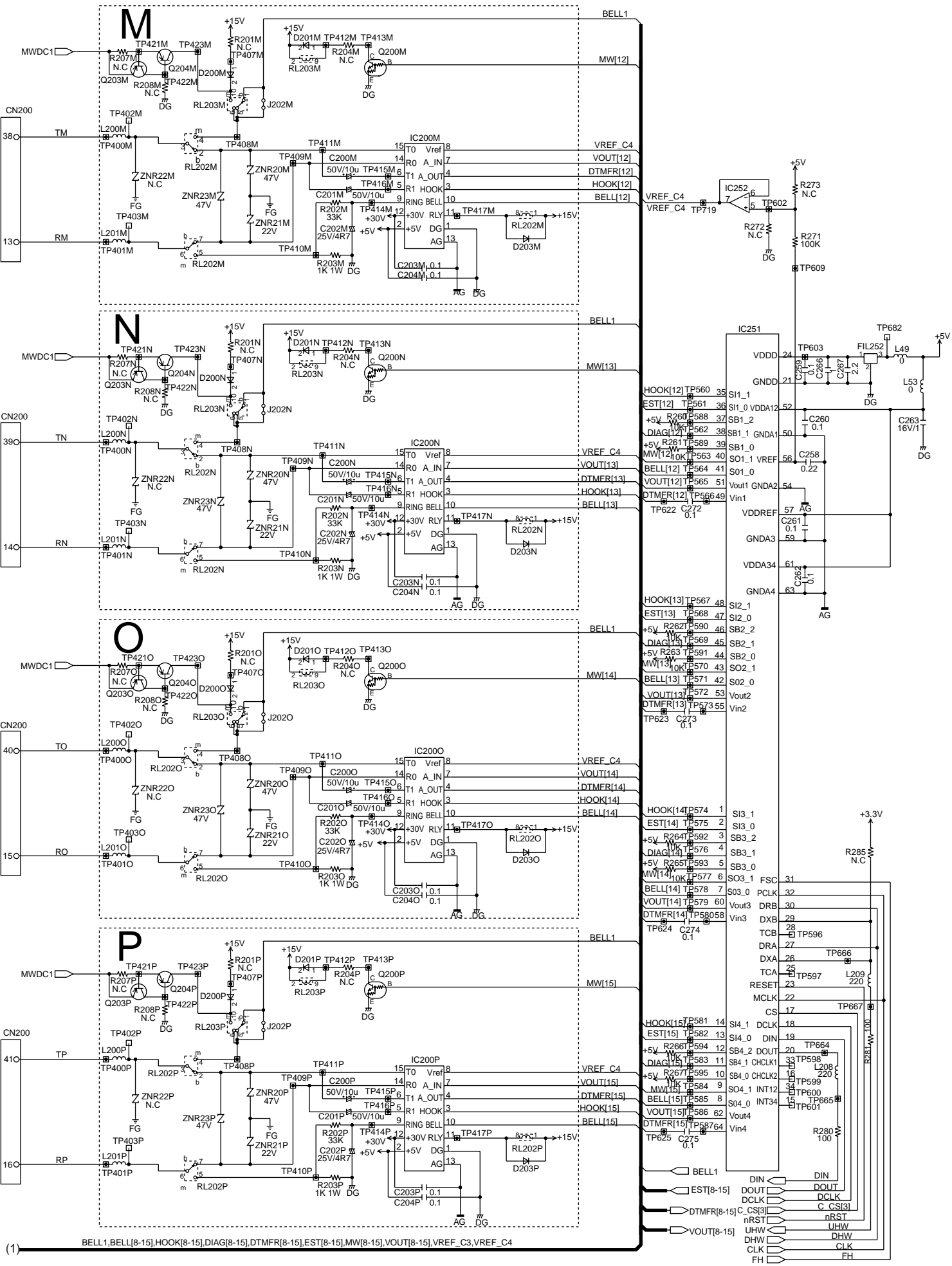
17.2. Bottom View

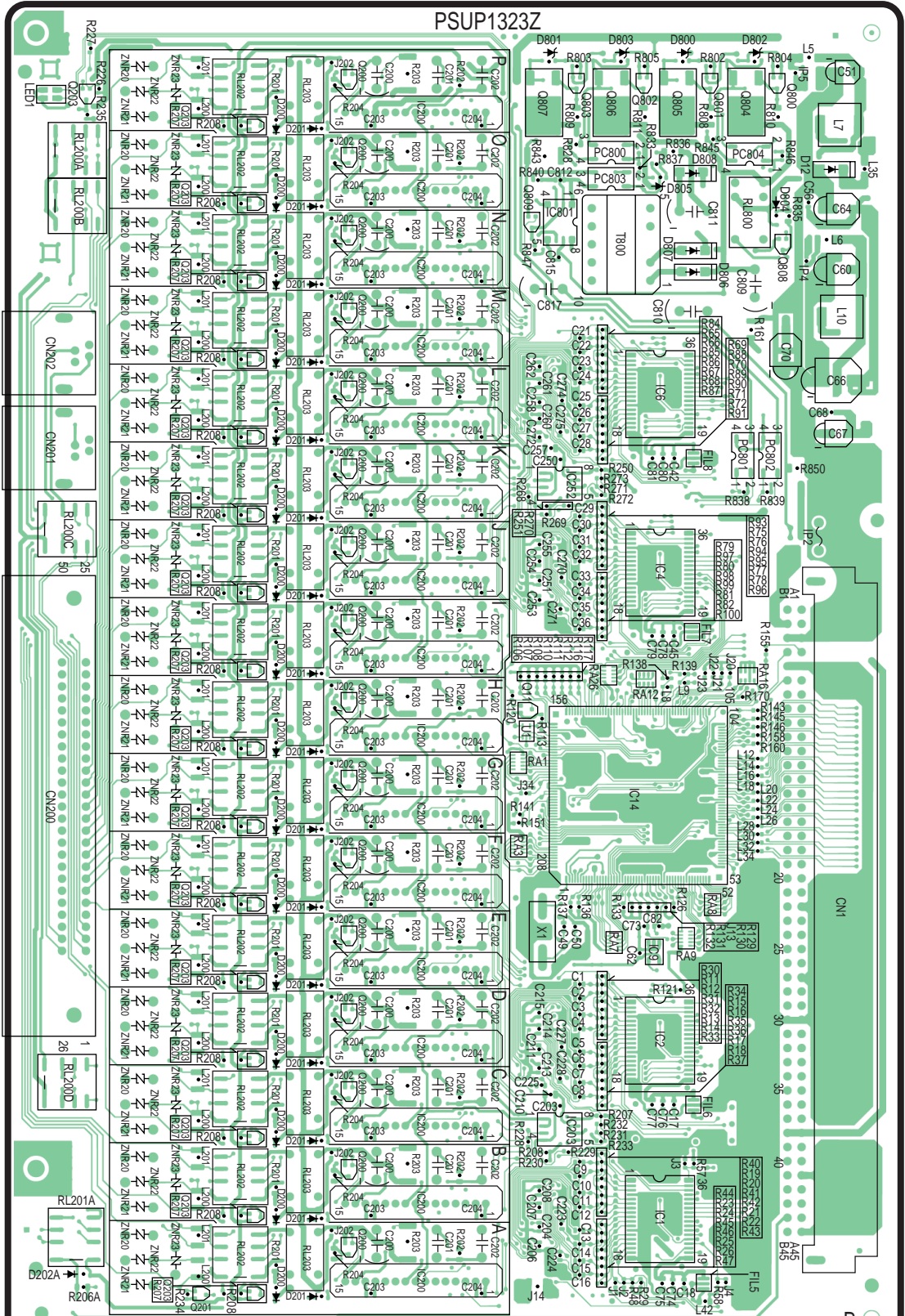
H / KXTDA0174





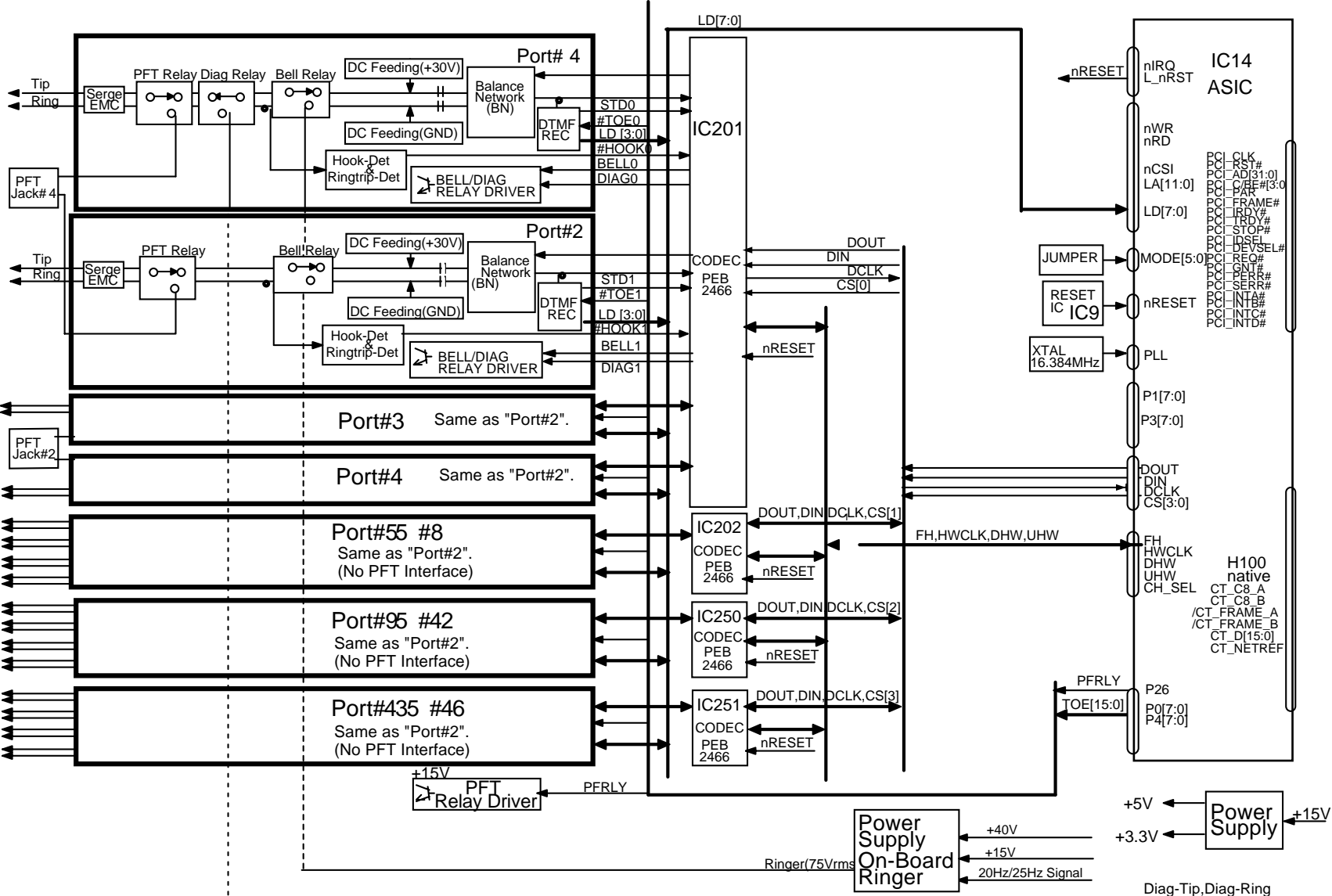
KX-TDA0174 SCHEMATIC DIAGRAM NO.3



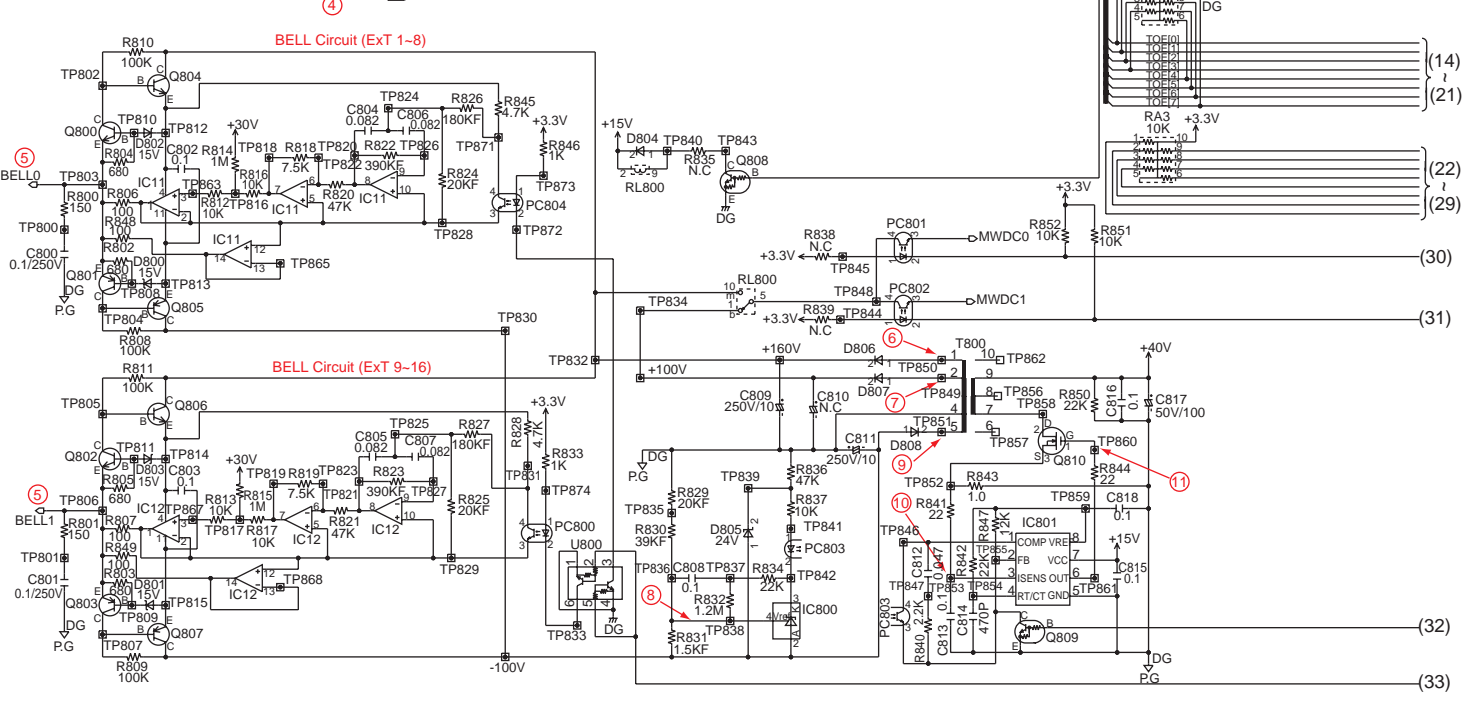
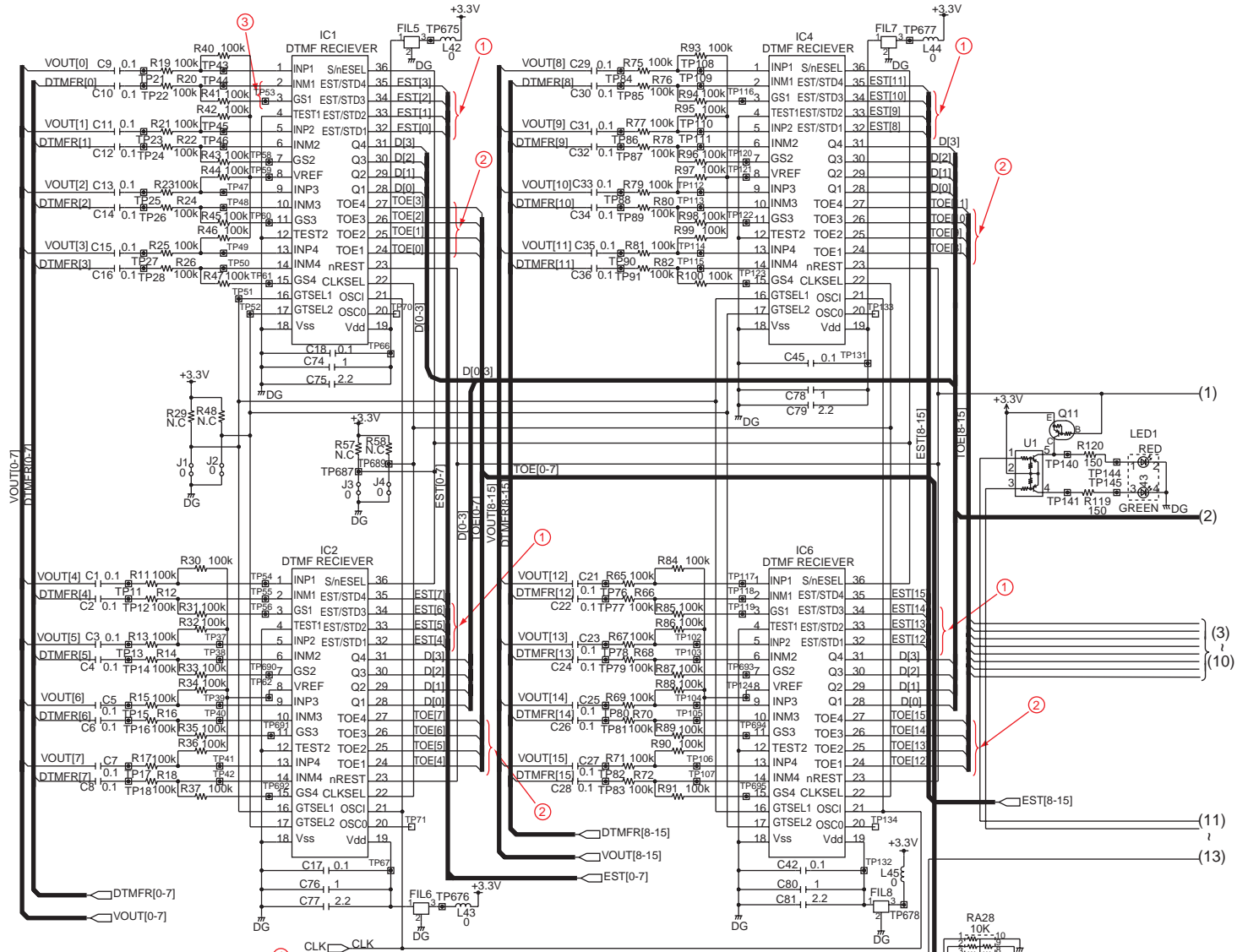


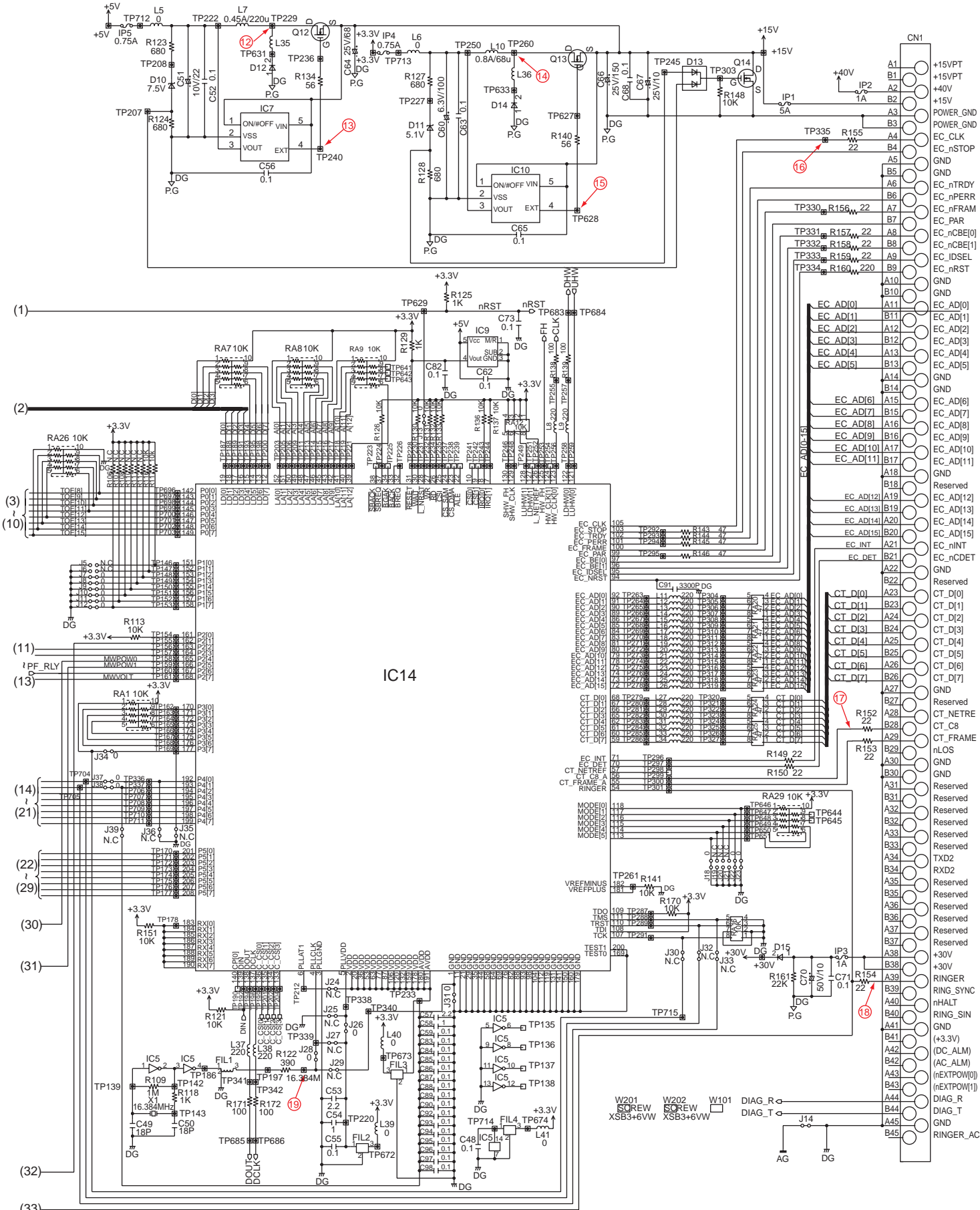


KX-TDA0174 Bottom View



KX-TDA0174 BLOCK DIAGRAM





KX-TDA0174 SCHEMATIC DIAGRAM NO.1

